COTTAGE INDUSTRIES AND AGRICULTURE IN JAPAN.



"*India's Salvation lies in Cottages.*"

—MAHATMA GANDHI.

CHAMAN LAL



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To

The revered memory of

Mahatma Gandhi

Who told the Nation

"India's Salvation lies in Cottages"

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Thanks

My cordial thanks are due to the authors and the publishers mentioned in the text for reproduction of their valuable researches on Industries and Agriculture in Japan. I feel it my duty to thank heartily General Douglas MacArthur—*the philosopher*—and all his officers but for whose co-operation it would have been quite impossible for me to collect materials and photographs for this book. It is an admirable example of cultural co-operation My special thanks are due to the ever-obliging chief of the SCAP's Natural Resources Section and his entire staff—both American and Japanese—who spared no pains to help me with the task entrusted to me by our Ministers of Industry and Agriculture, of whose personal kindness I feel very proud. I am not fully satisfied with my report because the abnormal costs of production (including my visit to all corners of war-torn Japan) have compelled me to withhold several chapters, photographs and useful materials, such as an index and a bibliography. I am presenting two books in one for the reader's benefit.

In conclusion I must thank the U. S Army photographers and the Tourist Bureau in Japan for taking special photographs for my book and The Times of India Press for their excellent reproduction. Believe it or not, *this edition is being published at a very heavy loss to the author* in the sincere belief that the loss is in a cause that was so dear to the Father of the Nation, and that it will bring its own reward,—the spread of the Gospel of Cottage Industries and " Back to the Land," which is the only Gospel that can bring peace and prosperity to the common man. By growing more food and turning homes into cottage factories alone can we fight the wolf of starvation. Japan is doing it. Why can't we ?

CHAMAN LAL

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The Rashtrapati's Message

SIXTY CRORES HANDS

(By the President of the Indian National Congress)

THE wheel of progress has taken a turn in the twentieth century. The era of empires has passed. The West can no longer raise its standard of life at the expense of the East. Nor does the East consent any longer to be blown away by the gales that emanate from European countries. With the dawn of freedom the East would rather be self-contained and self-sufficient. It could afford to do so.

Thirty crores of people in India means sixty crores of hands —and skilled hands at that. They offer occupation to millions, particularly in a country where the home is the abode of Beauty and Art is the handmaid of utility. Where the crafts flourish, there prosperity dwells, unemployment vanishes, waste is converted into wealth, and brains and emotions co-operate under the restraining leadership of will. The sanctity of the home is preserved. Moral values are conserved in society and the outpouring of the human soul on works of art woven into utility elevates the nation's culture to the highest altitude The co-operative spirit does the rest of the work. Work becomes worship and labour becomes capital and functions as the eternal wealth of the world. Labour and life by their confluence enrich the stream of national self-realisation and self-competence.

All this may sound 'windy, vapoury rhetoric.' So does it to untutored ears and untrained susceptibilities. But when one transports oneself into an atmosphere where labour and life do collaborate, one realises that all this talk about crafts and culture is not mere phantasmagoria To one like the author of this lovely publication, who has gone to Japan several times and seen things with his eyes, and brought things to our country and laboured hard to carry conviction to the Philistines of his Motherland, the reality of the theme is not a piece of imaginative speculation but a fact of experience. I have carefully read the typescripts and seen about 300 samples of work wrought in Japan—which restore the fading faith of man in the exquisite workmanship of fellowmen and women, and in the capacity of the nation once again to stand on its own legs This book will play a part in national reconstruction

4th December, 1948. *B. Pattabhi Sitaramayya*

Foreword

For many years now, there has been a movement in this country for the reorganisation of village industries which, after sustaining rural economy for many centuries, are now going through a period of decay. The importance of cottage industry to the economy of the country and to the role it can play in avoiding the evils of industrialisation on Western lines, is being increasingly recognised The Central Government have recently constituted a Cottage Industries Board for the purpose of promoting cottage and small-scale industries and securing a balance and co-ordination between large and small scale industries.

A healthy cottage industries movement is a feature of the economy of many countries, not excluding a highly industrialised country like the U S.A and has found its best expression in Japan and Switzerland. In these countries, though on essentially different lines, small-scale industry has been used as a partner with large-scale industry in the production of consumer goods not only for consumption in the localities in which they are produced, but for sale both within the country and abroad.

Mr. Chaman Lal's book should stimulate interest in the subject in its present context and be of assistance to all those who are interested in the revival of cottage industries in the country and in securing an ample contribution from them to the prosperity of the country. Mr. Chaman Lal has recently returned from a tour in Japan and his observations are in consequence as fresh as they are comprehensive. His study of the role of cottage industry in the development of Japan from an insignificant position to the status she had reached before the world war, should have many lessons for India. Mr. Chaman Lal has produced a stimulating book which should evoke considerable interest and serve a most useful purpose.

Syama Prasad Mookerjee

Preface

The agricultural economy and the industrial economy of a nation are always interlinked. The Japanese Government has, during the last half a century, converted Japan—an agricultural country—into an industrial country whose home-made goods and products of small factories are in demand the world over. While our country, with all her unique wealth of raw materials, her talented industrialists and their ambitious plans remains an agricultural country, Japan has undergone a revolution and the following figures of her national income from different sources bear testimony to this —

Agriculture	17·6 per cent.
Commerce	22·4 per cent.
Industry	32·7 per cent.

This revolution was wrought by a well-considered plan of co-operation between agriculture and industry. In Japan the Ministry of Agriculture is responsible for the promotion of cottage industries and small industries in the rural areas The chapters on Cottage and Rural Industries provide enough food for thought and scope for action if our officials of the Agriculture Department—some of whom are not only very able but gifted—could launch a similar plan in India The long list of 120 rural industries promises to absorb every unemployed person and sixty crores (perhaps more) hands can work the miracle, which the Congress President desires to witness

The home-industries of Japan are the best organised industries compared to those in any other part of the world While most countries stick to the age-old primitive methods in cottage industries, Japan and Switzerland make use of the latest scientific methods and modern technique to add to their efficiency. No wonder then that Japan was exporting (before the war) house-hold factory goods worth 200 million yen (16 crores of rupees or 12 million sterling) beside producing most of the goods needed for home-consumption—the finest varieties of Japanese silk and cotton dresses, kimonos loved all over the world for gaiety, colour and beauty, wood, bamboo, ceramics, toys and many scores of articles of every day use

JAPAN'S CHALLENGE TO THEORISTS.

In the chapter Secrets of Industrial Success the reader will find evidence in refutation of the common belief in our country that one cannot run an industry if the necessary raw materials are not locally available The home-industries as well as the large industries of Japan are a challenge to this orthodox view of those economists who, in the words of our Congress President, " do not understand the books they read " These so-called experts, whether, they belong to the bespectacled class of economists or to the heaven-born service, would be doing a great service to India if they

make an impartial study of Japan's industrial economy in action and not allow themselves to be misled by ill-conceived theories and prejudices and hates acquired from their former masters Our political prejudices must give way to economic realities, not theories We have cursed Japan and her industrial methods sufficiently long Now let us learn something by following Japan's example if we want to revive India's cottage industries and provide jobs for our ever-increasing population

The lack of particular raw materials should not and cannot stand in the way of our making our country self-supporting in certain industries If Japan can supply cloth to world markets without producing cotton, India can at least manage to do without foreign biscuits, butter, milk, jams, tinned fruits, etc. Can we not manufacture needles, pins, fountain-pens, cameras, binoculars, radios, inks, cycles and glassware? Most of these are made by simple Japanese folks in their one or two-room house-factories.

How I wish our Ministers of Industries and Agriculture could visit Japan, Switzerland and China and see for themselves what miracles can be wrought by co-ordinating the activities of the two Departments! What we need is an honest and bold resolve to see that a particular number of consumer goods is manufactured within a prescribed period. Our technicians and workers are no less talented than any other nationals of the world. What they need is machines and training

The All-India Cottage Industries Board has an ambitious plan of establishing a museum of small industrial machines and cottage industry, picked and chosen from machines in all parts of the world. If that plan is translated into action and some technicians are invited from abroad to train ours, there is no doubt that thousands of new home-factories will spring up in our country. There is not a machine which our mechanics cannot duplicate, but they must have a sample of every possible machine used in the home-factories of Japan, China, Switzerland, Sweden, Germany and Belgium.

MY PROPOSALS.

On the 28th August, 1948, I presented the following proposals to the Honourable the Minister of Industries, who had asked me earlier to submit a report on the cottage industries of Japan —

1 Appoint a Central Board and also a Provincial Board in each Province for the promotion of cottage and small industries The Boards should consist of men with practical experience, men of ideas and technicians but no politicians

2 The Provincial Boards should set up a register of all small and cottage industries in their province and the Central Board should compile an all-India register.

3 The Provincial Boards should take a census of qualified artisans in their provinces.

4. The Provincial Boards should encourage all talented and rare artisans.

5 Every district must have a vocational school to train people in small industries and cottage industries for which raw materials are available in the district, or a special group of talented artisans qualified in those industries should reside in that area

6. The Provincial Boards should set up co-operative machinery to encourage rural industries according to the plan of the Japanese Government with necessary modifications. This includes 120 industries under the following heads

(a) Food Industries.
(b) Marine products.
(c) Wood Industries.
(d) Textile Industries.
(e) Small machinery.
(f) Chemicals, fats and oils.

7. The Boards should grant loans to small industries and co-operative societies through the Industrial Financing Corporation or an Industrial Bank set up to promote industries

8 The Central Board should organise a central organisation for purchase and sale of finished products, and arrange to provide machines, tools and equipment to small industries through the Provincial Boards.

9 The Central Board should establish research institutes for handicrafts and various small industries and arrange to provide all facilities for research.

10 The Central Board should arrange travelling exhibitions and propaganda in India and abroad to push the sale of Indian handicrafts.

11 The Central Board should arrange to send 500 youngmen to Japan, China, Czechoslovakia, Mexico and other countries to learn handicrafts and small industries in those countries (at the expense of Provincial Boards).

12 The Central Board should invite a couple of experts from Japan and China to help in organising small industries on a co-operative basis

13 The Central Board should invite technicians from Japan at the cost of Provincial Governments who need such technicians to start various small plants

14. The Central Board should invite small Japanese factory owners to start factories in India on an agreed basis

15. Foreign samples and designs of various industries suited to particular districts should be kept in small museums in those districts and literature giving information about designs to be published in local languages by the Provincial Boards.

16 The Central Board should organise an all-India museum of small and cottage industries, especially from Japan and China

17. Special publications dealing with various small industries and handicrafts of the provinces should be floated by each Provincial Board.

18. Technical libraries to be opened in every district.

19 Several sets of small industrial machines to be immediately purchased from Japan and other countries to be exhibited in provincial museums.

20. Patent rights to manufacture those small machines and various manufacturing processes to be purchased by the Central Board to make them available to all provinces.

21 The tourist industry should be organised on a country-wide scale as in Japan and handicraft museums and retail shops should be attached to each office This alone will provide jobs to nearly ten thousand young-men and establish at least 5,000 centres for sale of handicrafts.

WHY WE FAIL

THERE IS NO LACK OF PLANS AND SCHEMES IN OUR COUNTRY WHAT WE REALLY LACK IS HONESTY OF PURPOSE MOST OF US CONTINUE TO DABBLE IN MATTERS ABOUT WHICH WE KNOW NOTHING AND REALLY WANT TO DO NOTHING. WE LACK THE CRUSADER'S SPIRIT WHICH OUR COUNTRY BADLY NEEDS TODAY

Our Prime Minister put it beautifully at a recent conference when he said. "The activity of power engineers is fortunately a peaceful activity and should not injure anybody Nevertheless, they should look upon it with the stress of a war emergency It is a battle against Nature, a peaceful war sometimes against considerable odds It is a battle for the benefit of the people of our country It is a battle which we are going to win and we are winning. I am not interested in excuses for delay; I am only interested in a thing done. If a General, after losing a battle, comes to me with excuse for the defeat, that General will be sacked I want victory, at whatever cost. And I want the spirit of victory."

It is indeed an inspiring message for all public servants, including our Ministers But the same excuse is being presented in our Parliament from day to day for official failure to find shelter and food and nobody has been sacked for the bungling that continue to be responsible for the misery of millions.

The whole trouble is that, barring a few exceptions, we lack the spirit of victory and enthusiasm for our jobs If all of us imbibed the spirit and enthusiasm left to us as a legacy by Gandhiji, we could wipe out poverty and misery by carrying out a co-ordinated plan of agriculture and cottage industries, since India's salvation lies in rearing up real good cottages, not miserable mud huts, but cottages like the ones our Indian farmers have in California, fitted with all modern comforts and radio. [1] That is my dream of life in Free India.

JAI HIND.

CHAMAN LAL.

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[1] Read chapter "BACK TO THE LAND"

CHAPTER I

TOO MANY PEOPLE—TOO LITTLE LAND

DENSITY OF POPULATION

JAPAN TOPS THE LIST

SIXTEEN PER CENT TILLED LAND

DOUBLED IN FIFTY YEARS

BIRTH AND DEATH RATES

LET FIGURES SPEAK

POPULATION STILL INCREASING

CAUSES OF RISE AND FALL

CAN BIRTH CONTROL SUCCEED?

WANTED MORE LAND

LAND IS PLENTY

BUT NOT FOR ASIANS

RACIAL PREJUDICES

WANTED KINGDOM OF HEAVEN

EXPECTATIONS FROM AMERICA

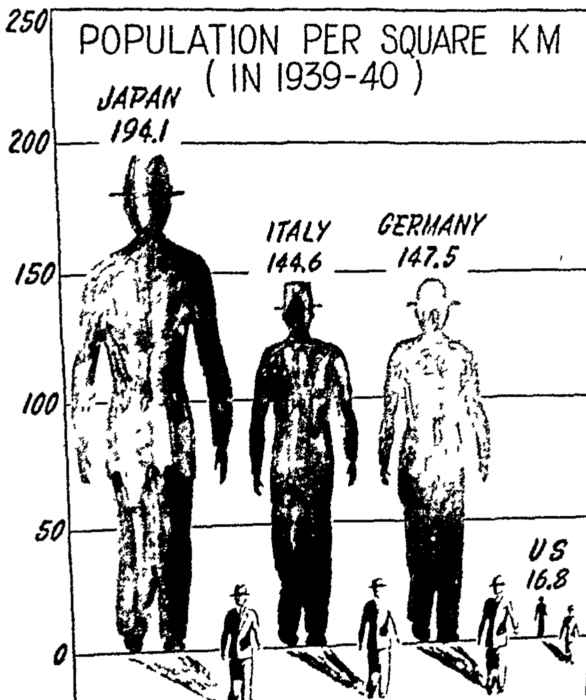
PETITION TO THE U.N.

AMERICAN PUBLIC HOSTILE

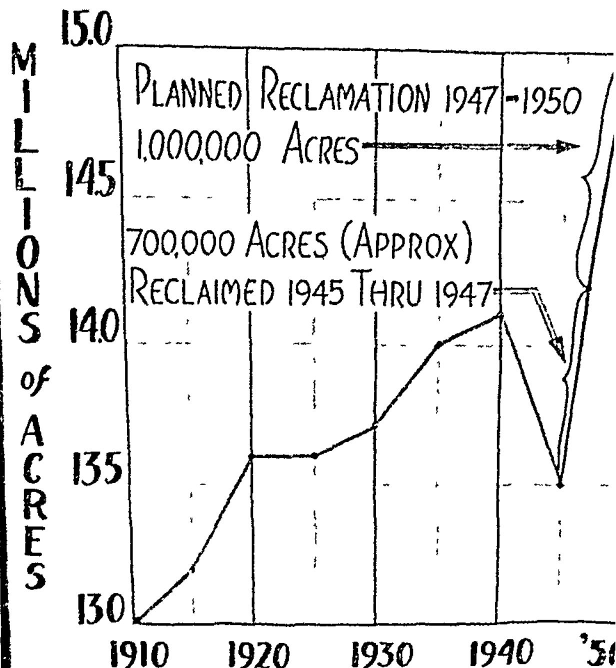
THE ONLY REMEDY

JAPAN

TOO MANY PEOPLE - TOO LITTLE LAND

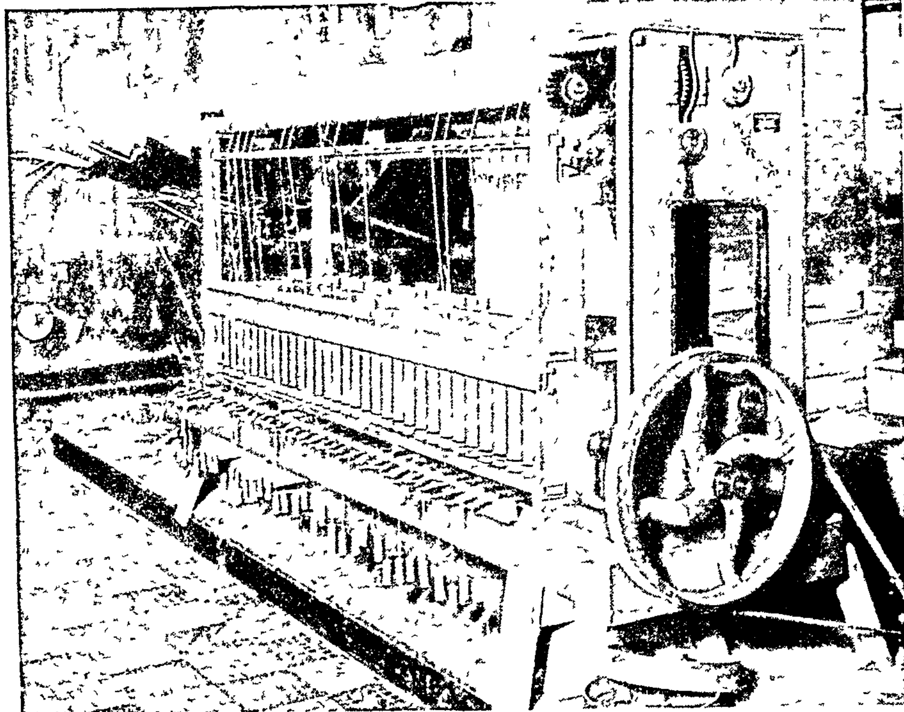


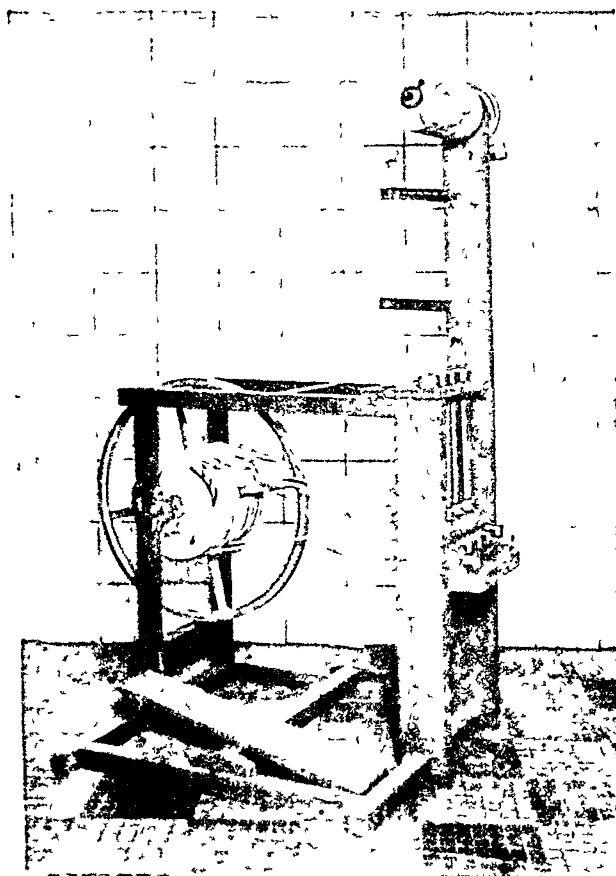
AREA UNDER CULTIVATION I
JAPAN



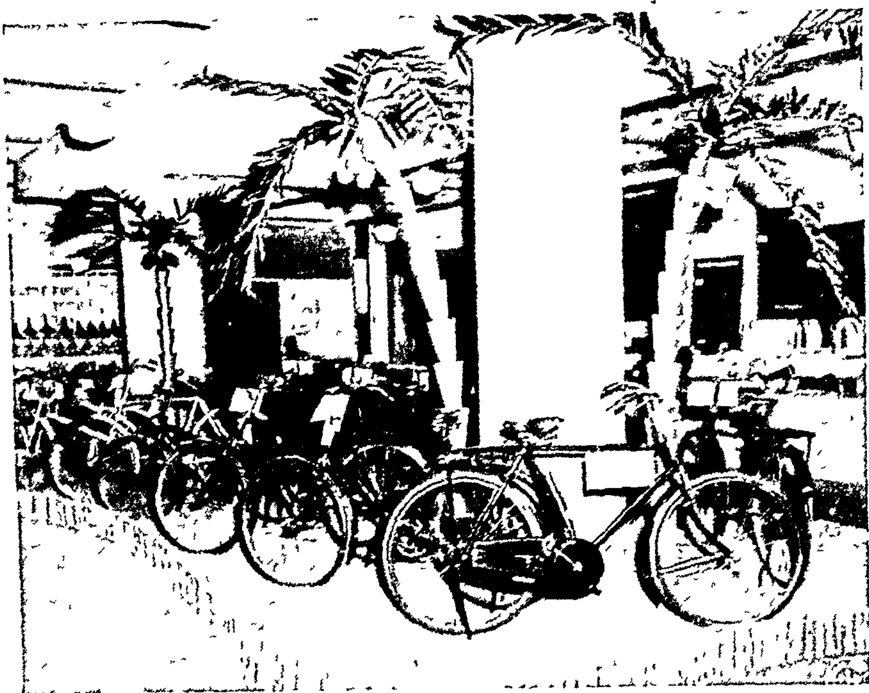
BASED ON DATA FROM MINISTRY OF AGRICULTURE AND FORESTRY WITH ESTIMATED CORRECTIONS FOR CHANGES IN REPORTING

Simplest Power Spinning Machine—64 Spindles

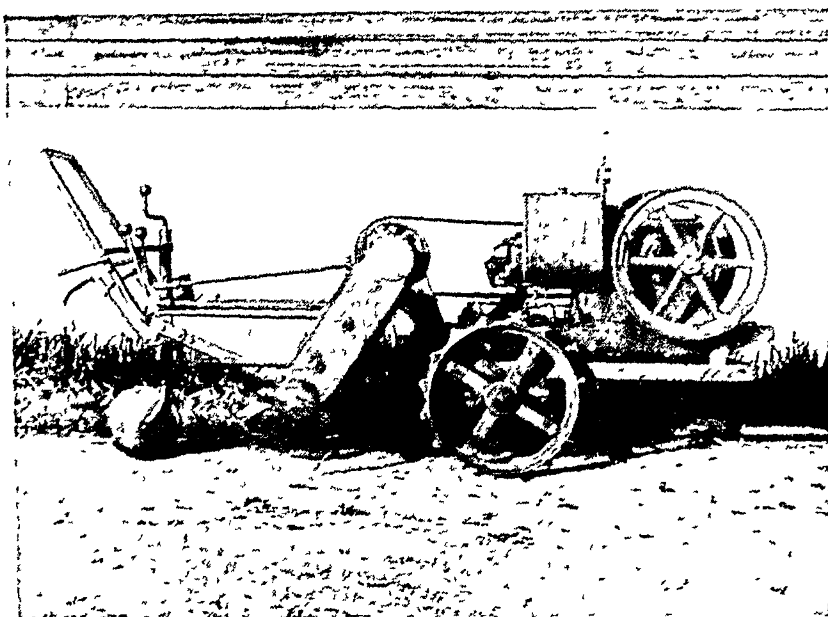




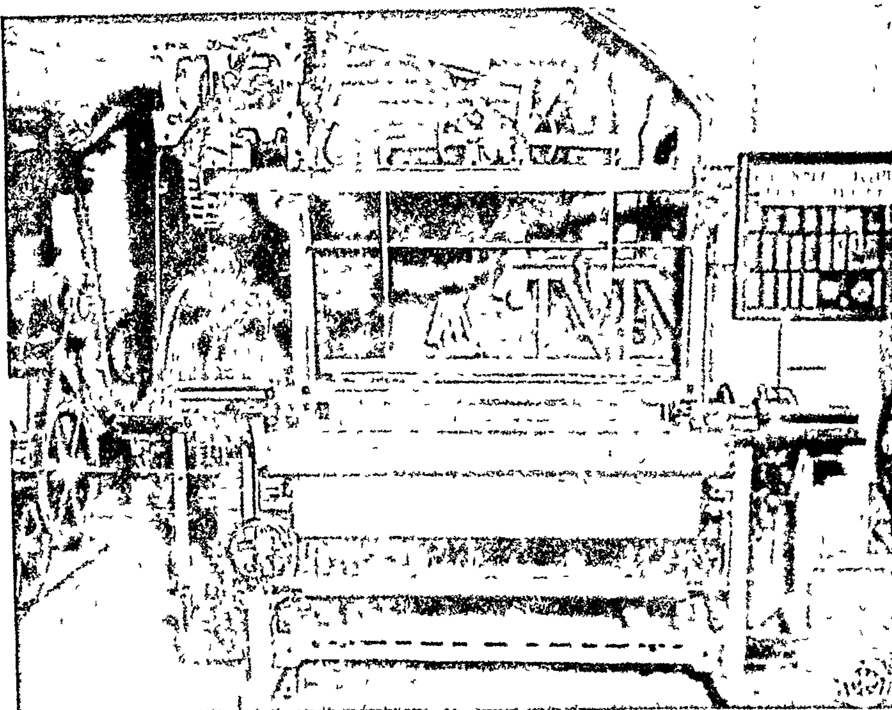
Four and ten Spindles Charkha It yields 4 to 6 lbs. of yarn in 8 hours



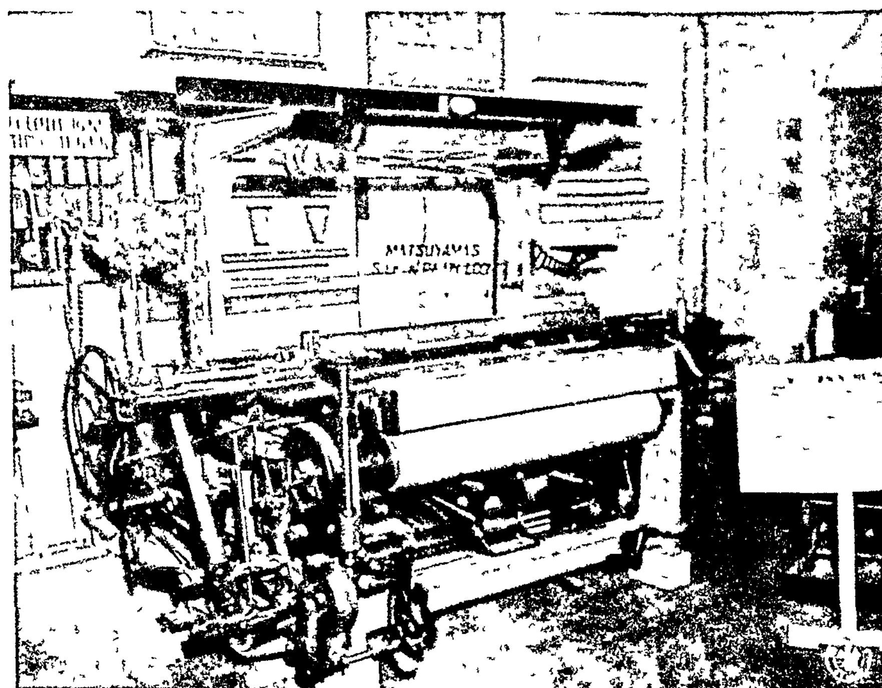
New Cycles from Japan



Light Tractor—Product of KUBATA IRON WORKS, OSAKA



Looms for Small Industry



Silk and Rayon Loom

CHAPTER I

TOO MANY PEOPLE—TOO LITTLE LAND

And God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it · Genesis—Chapter 1, *verse* 28

* * * *

Everywhere in Japan people are declaring " Our village is overpopulated The arable land is so limited that we have hardly any room. There are no steady jobs in the villages for our excess population It is even more difficult to find work in the devastated cities. What shall we do ?"—S. Miyake in JITSUGYO NO NIPPON.

The idea of a natural right to expansion is less dangerous than the idea of a man-made right of refusing to recognise that right—Isoshi Asahi.

When this world was born, God's own land was no one's exclusive preserve. The Vedas, the Bible and other religious books exhort people to multiply and replenish the earth The Japanese followed these teachings literally and the result was a disastrous war, which has made their problem still more acute Their complaint was that they have too many people but too little land, while Canada, Australia, the U.S.A and many other countries have millions of acres of vacant land with too few people to cultivate them.

It is unfortunate that Japan followed in the footsteps of her Imperial guru—Britain—and today she is faced with a greater crisis than the one which goaded her to war A glance at the graph on the opposite page shows how acute the problem is

JAPAN HAS NOW LOST 47 PER CENT OF HER FORMER TERRITORY WHILE THE POPULATION IN HER REDUCED TERRITORY HAS WITNESSED AN INCREASE OF TEN MILLION PERSONS (WITH MANY MORE YET TO RETURN FROM RUSSIAN-OCCUPIED MANCHURIA)

JAPAN TOPS THE LIST.

According to Isoshi Asahi, the density of population in Japan is the greatest in the world. The area of Japan is 147,651 square miles, a little larger than the United Kingdom, but smaller than the State of California and less than half the size of New South Wales People often fall into the error of discussing population by comparing the average number of inhabitants per square mile. The Netherlands and Belgium are usually cited as examples of densely populated countries which are not troubled by the population problem. It is true, says Asahi, that the population per square mile of surface area of land is larger in these countries than in Japan. But it must not be overlooked that both of them have colonies larger than themselves. Further, in Belgium 40 per cent and in the Netherlands 30 per cent of the surface area are tilled, while in Japan only 16 per cent is under cultivation. Japan is a volcanic country, five-sixths of which is not cultivable The defunct League of Nations gave out the following figures of population on arable land per square mile in densely populated countries .—

Japan	2,774
Britain	2,170
Belgium	1,709
Italy	819
Germany	806
France	467
U S.A	229

POPULATION DOUBLED.

The following table presents the problem of Japan's ever-increasing population. Every hour brings more than a thousand Japanese into their already crowded islands.

Year.[1]	
1888	39,600,000
1920	55,963,000
1925	59,736,000
1930	64,450,000
1935	69,254,000
1948	80,000,000 (approximately)[2]

[1] Statistical Year Book of the League of Nations, 1937-38 (now the population has risen above eighty million)

[2] TOKYO, Jan 6 —Japan's population rose by more than two million between October 1947 and October 1948, to 80,697,491, official occupation sources revealed today Current estimates assume it will reach 100 million by 1968 —*Reuter*.

There is every danger of this population increasing every year at the rate of a million more hungry mouths to feed. This is evident from the following table of births and deaths :—

Countries	Birth and Death Rates	
	Births per 1,000	Deaths per 1,000.
Japan	31 5 (1936)	17·4 (1936)
U S A	17·1 (1934)	11 0 (1934)
Germany	18 9 („)	11 8 („)
Italy	23 3 („)	13·9 („)
England	15 2 („)	12·0 („)
France	15 3 („)	15 7 („)

LET FIGURES SPEAK.

The following table gives population per hectare of tilled land in various countries in order of density .—

Country.	Population (in thousands)	Tilled Land (in thousand hectares).	Percentage of tilled land to total Area.	Population per hectares of tilled land persons.
Japan	70,500	5,988	16%	11 7
United Kingdom	47,098	5,285	22%	8 9
Netherlands	8,557	968	29%	8·8
Indonesia	66,400	7,744	4%	8 5
Switzerland	4,174	501	12%	8·3
Belgium	8,331	1,221	40%	6 8
Germany	67,587	20,412	44%	3 3
Italy	42,077	12,835	41%	3 3
India (United)	374,200	126,646	27%	2·9
France	41,910	21,445	39%	1 9
U S A	128,840	116,037	15%	1 1
U.S.S R.	175,500	223,916	11%	0·7

GENEVA INQUIRY

The Director of the International Labour Office, Geneva said in 1938[1] .—

Already the populations of China, India, Japan and Java are in excess of their available resources, if measured by any Western standard

[1] Problems of Industry in the East, by Harold Butler, Geneva, 1938, p 67

of life The further increase which is bound to occur over the next twenty years can only be met by intensive measures to increase the yield of the land, to colonise unsettled areas, to exploit undeveloped resources and to enhance industrial production In Japan, for instance, it is estimated that work and wages will have to be found for 400,000 additional workers every year between 1950 and 1960 There is no room for these nine or ten million extra people and their dependants on the land Already in 1930 every hectare of tilled land in Japan supported 11 persons as compared to 8.7 in the Netherlands and 3 in Italy.

The fifth conference of the Institute of Pacific Relations held at Banff in Canada also came to the same conclusion and stated[1]:—

The immediate problem faced by the Japanese leaders is to provide for ten million who will have been added to the adult population by 1955 There is no way of avoiding this question. The boys who will form the working population are already born, and will come into the labour market each year at the rate of 200,000 or 250,000 in excess of the older men who withdraw. Birth control will not control this part of the population problem. Nor is it simply a problem of keeping these additional souls alive. What Japan must do is to find a way to absorb them without sacrificing any of the improvements she hopes to effect in her present standards of comfort.

OXFORD PROFESSOR'S VIEW.

Professor W R Crocker in his book "The Japanese Population Problem" writes (p 205):—

In consequence we are to expect that it will be twenty or thirty or more years hence before a pronounced turn towards a stationary level is made, and that at least 15 to 20 million persons will be added to the present numbers before then.

Within the next generation then, some 15 to 20 million (or more) additional individuals will have to be fed and clothed The Japanese economic system is already embarrassed by the size of the population it now supports. Can it be made to support an increase of this magnitude?

POPULATION TO INCREASE STILL

My three months' study in Japan (during my sixth visit) has convinced me that, war or no war, the population of Japan will continue to rise unless General MacArthur issues a directive stopping further production in human industry! Knowing him personally as I do (he impressed me as a religious and philosophical person) I am sure he will not favour an official campaign for birth control The

[1] Problems of the Pacific, 1933, p 122

Japanese Government is also indifferent to the problem. The following factors are bound to help the growth of population in Japan .—

1. Natural fertility of women
2 Care for the offspring.
3. Regular supply of wholesome food.
4. Steady advance in industry
5. Healthful lower standard of life.
6. Love of family or home.

CAN BIRTH CONTROL SUCCEED ?

The sponsors of 'White Australia' and 'White Canada' preach to the Japanese birth control contrary to the Biblical teachings "Be fruitful and multiply". I am personally in favour of birth control but my opinion or the preaching of our "white policy" advocates have no meaning unless the people of Japan themselves seriously resolve to launch a campaign for birth control The Institute of Research on population problem recently conducted an inquiry into the subject among the Japanese Government Officials and factory employees in Tokyo, but the results were not very encouraging. Only 1764 persons returned the investigation cards, which revealed that 460 persons had practised or are practising birth control and 343 of them are still practising Further analysis showed that out of these 343, government officials and clerks lead, the percentage being 32 6. Among the factory workers the percentage was 15 7 The reasons given for practising birth control were the mother's health, economic and other difficulties of bringing up children. Economic reasons count for 32 7 per cent

Twenty-six and a half per cent of the cards strongly opposed birth control and favoured large families, 37 9 per cent stated that they were indifferent since they felt no need of birth control

MASSES AGAINST BIRTH CONTROL

My personal investigations amongst different classes of Japanese gave me the impression that, except for the college-educated youth, most of the Japanese are against birth control The *Nippon Times*, an influential Japanese daily criticising official indifference on the subject recently said in the course of a leading article —

"It is an inexcusable situation that, while other people are worrying and pondering over Japan's population problem, the Japanese Government itself has no definitely formulated population policy."[1]

WANTED MORE LAND.

I am convinced that birth control has not much chance of success in Japan and the United Nations must find land for the overcrowded

[1] This is equally true of India

people of Japan and other countries. Unfortunately all vacant lands are in the possession of Christian nations who do not believe in sharing these lands with non-Christians. Even if the Japanese embrace Christianity, advocates of 'White Canada' and 'White Australia' will not permit them to share these lands with them. This is how the Japanese feel on the subject[1] :—

Look at what the so-called followers of Christ are doing in Europe and America. They just 'have and hold', to the exclusion of other peoples, Nature's gifts to mankind as if it were to them alone that God had said, "*Be fruitful and multiply, and replenish the earth, and subdue it*." They behave themselves as if the world belonged to them Christ's main teaching, the doctrine of the Kingdom of God, plays so small a part in Christian creeds ! With them, God's universal fatherhood and the brotherhood of all mankind have no place in this world, except in the Bible Should the Kingdom of Heaven not be of this world ? How do they differ from the Pharisees when they honour God with their lips alone ?"

WESTERN RACIAL PREJUDICES

Commenting on the racial arrogance of some people in the West the same Japanese writer says:—

"The West seems to have an ineradicable attachment for the system of classifying the people of the world into two separate and distinct categories, each opposing the other Christians and pagans; tyranny and freedom, democracy and totalitarism, fascism and liberalism, capitalism and communism, idealism and materialism; peace and war; the Jews and Gentiles According to this system of classification the one is always bad or wrong, while the other is always good or right. But are the peoples of the world, their creeds, their political systems and manner of thinking so simple as to admit of such clear-cut distinctions into good and bad ? Those people who like any of these simple classifications seldom reflect that they are simply glorifying their own people, institutions and manner of thinking and minimising the righteousness of other creeds and other races—a tendency which Jesus scorned This is the tendency which forms the greatest obstacle to true peace or harmony of this world.

WANTED KINGDOM OF HEAVEN

"*Had these so-called followers of Christ honoured Him by deeds, not by words, the Kingdom of Heaven would have been here on this earth, not in the next world. There may be many true Christians like St Francis or Kagawa in all countries. But the saddest fact is that Christianity never yet Christianised a State*", *concludes Mr. Asahi.*

[1] Isoshi Asahi, Economic Strength of Japan, pp 281-83

EXPECTATIONS FROM AMERICA.

Despite the above quoted views of a Japanese writer, the masses in Japan, who are impressed by General MacArthur's humane policy, expect that the United States will persuade the U N. to grant living space to the Japanese in some islands in the Pacific I cannot say how far these hopes are justified, but the Japanese are very hopeful and before I left Japan a petition had been sent to the United Nations to that effect On my way back to India I travelled with an official of the State Department and discussed the subject with him. He was of the view that American public opinion will not favour any such proposal because that will amount to giving the Japanese what they had fought for—colonies

Anyhow there is no immediate likelihood of a peace treaty with Japan and the Americans have 'dug in' for atleast the next five years when American public opinion will protest against the heavy expenditure in keeping an army of occupation in Japan By then the Russo-American crisis is sure to have resolved one way or the other and, until that time, Americans will use Japan as their workshop—feed the Japanese and make them work for upholding American supremacy in the Pacific.

The Japanese have a hard road ahead before they can once again be the masters of their own fate. They know it but they do not protest since they are marking time. Who knows how they will act when the opportunity comes? Meanwhile, they believe in hard work and patience

THE ONLY REMEDY.

Japanese officials, scholars and economists all agree that as long as vacant lands are not thrown open to overcrowded countries like Japan, the only remedy left to them is to develop small industries and home industries

The opinions of Professor Hyoe Ouchi are given at second hand in Shozo Otani's article in *NOGYO ASAHI*, titled "What to Do With Overpopulation" Ouchi says, and Otani agrees, that neither agriculture nor major industries can assimilate the excess population, and that this will have to be accomplished through minor industries. Ouchi is said to feel optimistic over Japan's chances of creating these minor industries because of the provision in the Potsdam Declaration that Japan will be permitted to maintain those industries which are necessary to sustain a peacetime economy.

ESTABLISHING RURAL INDUSTRIES.

A new basis for rural industries is described by Shikanosuke Miyake in *JITSUGYO NO NIPPON*. Everywhere in Japan, he asserts, people are declaring · "Our village is overpopulated. The

arable land is so limited that we have hardly any room. There are no steady jobs in the villages for our excess population. It is even more difficult to find work in the devastated cities.... What shall we do "?[1]

Miyake then gives what he believes to be the answer .—" Enterprises which are founded upon domestic resources should be scattered throughout the country to avoid excessive concentration of population in the cities" The traditional farm village industries, he maintains, are simply subsidiary industries, closely connected with farming, which serve to provide spare time work for farmers Those to be created—as different from industries which were formerly run from outside and merely utilised the cheap labour of the farm districts—should be specially attuned to the local communities, and the workers should be given some share in their management and ownership Buildings once used as war plants are now available for reconversion in many areas and ought to be utilised. Miyake describes at length several experimental ventures which have become thriving organisations " Increasing interest is being evinced in future industries for farm villages Leaders of farm villages must guide this interest into the proper channels" And, in order that rural enterprises may grow and prosper as desired, Miyake proposes measures through which Government can encourage village industries—extensive rural electrification, allotment of funds, creation of a Farm Industry Union Law, and making available the required resources.

Jobs First, Democracy Next

A similar argument for what he calls " farm-village industries " is advanced in *KAGAKU-SHUGI* by Chotaro Sakairi, who declares that democratisation of farm communities cannot be achieved while the unemployment problem remains unsolved Farm village industry must have its basis in the surplus of local labour and must be attuned to the agricultural economic system It is further affected by (1) local labour conditions and availability of skilled labour, (2) transportation facilities, and (3) supply of power Today, says Sakairi, development has been under the capitalistic system and has suffered from exploitation—with the local population supplying nothing more than unskilled labour. In future, such industries should embody technical and scientific spirit, and modern mass-production methods should replace the old and outmoded

The Road to Industry—75 Years' Record.

Seventy-five years ago Emperor Meiji, a farsighted ruler of Japan, put Japan on the Road to Industry and turned an agricultural country

[1] Press analysis summary issued by the SCAP Information Office

into a leading industrial nation and thus solved the problem of over-population.

Changes in industrial classification of gainfully employed persons (based on Japanese Government census data) show that the number of persons employed in industries rose ten times

Year	Agriculture	Manufacturing	Commerce and Trade.	Total including other Business
1873	78·0	3 6	6·6	100
1920	52 4	18·9	13·4	100
1930	47·7	19·8	16 6	100
1940	42·6	25 0	15 0	100
1944	43·1	29 2	7 2	100

AGRICULTURAL TO INDUSTRIAL

Industrial classification of gainfully employed persons (based on Japanese Government census of 22nd February, 1944) also proves that out of 32 million employed persons less than 14 million were employed in agriculture

Agriculture	13,769,429
Aquiculture	462,844
Mining	789,962
Manufacturing	9,389,573
Commerce and Trade	2,490,652
Transportation	1,617,864
Government employee and professional people	2,853,353
Household affairs and home business	489,538
Other business	141,108
Total number of those gainfully employed	32,004,323
All others, including unemployed, physically disabled and those unoccupied because of age	41,360,799
TOTAL POPULATION	73,365,122

Now it is nearly eighty million

JAPAN'S CHIEF RAW MATERIAL.

Home industry is the lifeline of Japan, especially today when large factories are either damaged or are being claimed as reparations by the victors. Japan's chief raw material is her willing and hard working labour. The United States of America will be obliged to supply Japan with other necessary materials such as cotton, steel, coal and petrol to run Japan's factories as an initial recovery step. It is expected that within a couple of years Japan's industrial production (which is 40 per cent of its pre-war production) will be lifted to between 65 and 70 per cent of Japan's peak production in the years 1930-34.

When the economy of Japan was purely agricultural it supported a generally stable population of about 30 million people. The support of an additional 48 million people in less than a century has been made possible primarily through the growth of industry, specially the home industry. Only by an increase in the industry in that sphere can Japan support its ever-growing population. The slogan of every Japanese today is :—

"MY HOME IS MY FACTORY"

Read more about it in Chapter V.

CHAPTER II

SECRETS OF INDUSTRIAL SUCCESS

CLIMATE A BLESSING
HONOUR ABOVE LIFE
LOVE OF NATURE
SKILLED LABOUR
INDUSTRIAL GENIUS
BENEVOLENT GOVERNMENT
MASS LITERACY
NO ILLITERATES IN MY COUNTRY
CHEAPEST TRANSPORT
CHEAPEST ELECTRICITY
DECENTRALISATION
CLASSLESS SOCIETY
HONEST AND CONTENTED LABOUR
SECRET OF CONTENTMENT
FAMILY SYSTEM
CO-OPERATION EVERYWHERE
SIMPLE HOME LIFE
BUT NO LOW STANDARD
UNITY OF PURPOSE
RATIONALISATION
BETTER ORGANISATION
EFFICIENT MANAGEMENT
A FRENCH VIEW

BRITISH TESTIMONY
HAPPY WORKERS
BUSINESS METHODS
BRITISH MISSION'S REPORT
NATIONAL SPIRIT
MAJOR ROLE OF SMALL INDUSTRIES
TALENTED WOMEN
SAVIOURS OF JAPAN

CHAPTER II

SECRETS OF INDUSTRIAL SUCCESS

Japanese industrialists do not squeeze the consumers. They do not draw fabulous salaries The proprietor of a steel factory and his two brother shareholders draw only about four rupees per day (the salary of a clerk in India)—' Made in Japan '.

* * * *

India is the mother of cotton. Japan learnt the art of textile manufacture centuries after India reached her glory and yet Japan provides us with cloth of all descriptions—WHY ?

* * * *

Lovers of Nature are always masters of artistic tastes. Japanese are true lovers of Nature Closely associated with their traditional shrine worship is the Japanese love of Nature, of mountains, hills, valleys, sea, rivers, flowers and stones In no other country, perhaps, is love of Nature greater than in Japan No wonder Japan is a country of fine arts.

* * * *

No country can compete with the whole world simply with cheap labour. Read the secrets of Japan's industrial progress in this chapter.

Hardly three quarters of a century have elapsed since Japan was freed from the bondage of feudalism and she set about organising a modern economic system. Those who are interested in the whole history of Japan's industrial evolution may read the book[1] Secrets of Japan (published in 1935, 1936 and 1937). Some of us who see through British eyes, think with British brains and suffer from inferiority complex, have been cursing the Japanese industrial methods for two decades. We have cursed them long enough. Now let us emulate what is good in Japan's industrial organisation which, despite long years of war and atom bombs, is rapidly recovering her lost markets and that miraculously Let us try to study and diagnose Japan's industrial organisation which is the result of man's genius and Nature's blessings

[1] By the author of this book

Climate A Blessing.

The more I see Japan, the more I am convinced that Japan is a favourite child of God as far as her climate and natural beauty are concerned. The U.S.A. is indeed the greatest favourite child of God but Japan is also a great favourite compared to India. Think of the cruelty God has done to India in giving us a long summer of nearly six months, and at places even seven months, and compare it with the climatic conditions in Japan and then you will realise how God has been partial to Japan.

Practically the whole of Japan is one beautiful garden, and in one hour's drive from busiest cities you can reach quiet and beautiful abodes of Nature. We in India are justly proud of our Kashmir (called the paradise), but the whole of Japan is a bigger Kashmir, where one can enjoy a small excursion to a beauty spot at a cost of five to ten rupees for a week-end

Nature's blessings on Japan are manifold. Japan on the whole is mountainous, extensive plains being comparatively few Owing to the mildness of climate and abundance of rainfall, forests are found throughout the land Rivers intersect the country in almost every direction and help irrigation and transportation Japan also lies along one of the world's most noted volcanic routes, and the volcanic cones that stand in almost every part of the country tend to add to the diversity of natural scenery and also to heighten, by contrast, the natural beauty of the country

Natural Beauty.

Japan is endowed with an infinite variety of topographical features. Her territory abounds with mountains, enchanting valleys, rivers, rapids, waterfalls and fascinating and unique coastal indentations. Wonders of Nature such as these have inevitably influenced and moulded the characteristics, manners and customs of the Japanese people. Their very traditions, history, philosophy, and art were all born beneath the benevolent sway of Nature and have been nurtured under its benign guidance.

Mild Climate.

The unique geographical situation renders Japan's climate very mild and temperate and gives it the regular alternation of the four seasons of the year.

The climate of a country is a great factor in enabling its people to work hard or to make them lazy. In India, the terrible heat deprives us of half our energy, while Japan has a very enviable climate which makes her people work hard and with cheer.

HONOUR ABOVE LIFE.

The Japanese craftsmen and workers are highly conscientious. To them honour is always more precious than life. Their highest ambition is to become foremost in their profession, thereby elevating their family reputation. Mr. Fujihara relates the following true stories[1] :—

(*a*) Once upon a time there lived in the city of Yedo (now Tokyo) a celebrated mask-maker, Gengoro by name. He was highly temperamental like all artists, and would not work when he did not feel like doing so. He was, however, far from being devoid of artistic conscience and would not resort to makeshift work even in the depths of poverty Gengoro was a thirsty soul, and would not heed his wife's remonstrances when steeped in sake[2] One day his wife reminded him of the approaching Lantern Festival of Bon She said she was sorry she could not buy a new kimono for their eight-year-old son, whose name was Gennosuke She also called his attention to the fact that a mask ordered three years ago by the Kanze school of actors, which had been partially paid for in advance, still remained unfinished This time the mask-maker became serious even though still under the influence of liquor, and he began to work on the half-finished mask, brushing the dust away. After a few days of steady concentration, the mask representing a demoness burning with jealousy and anger was finished. The wife was even happier than the artist and sent the mask by the little boy to the Kanze school. The veteran actor, who was in the midst of a banquet, was pleased with the work, but he wondered if the mask had not been finished hastily in order that payment be made before the Lantern Festival. It would indeed be a disgrace for an eminent actor to wear a mask of crude workmanship, and the mask was smashed to pieces in the little messenger's presence. Gengoro killed himself soon afterwards by cutting his throat with one of his favourite chisels. He left a letter in which he said that he had to die on account of the humiliation to which his work had been subjected by the actor The memorable chisel was left as a memento to the son, to whom a pathetic message was addressed encouraging the little boy to work hard and become a great mask-maker worthy of the father. After twelve years of steady apprenticeship, Gennosuke, the young artist, became suddenly famous all over the city on account of a figure of Emma,[3] the King of Hell, which he had carved for a Buddhist temple. One day a messenger came from the actor who had humiliated his father, and the young man complied with the request to make mask representing the same demoness. It was to be used at the opening performance on the new

[1] The Spirit of Japanese Industry

[2] Japanese drink

[3] Yama

stage built in the Shogun's Palace. Gennosuke set to work immediately by purifying himself and his father's old chisel. When the work was finished to his satisfaction, the young artist worshipped before his father's mortuary tablet and took the mask to the actor, now an old man with grey hair. Gennosuke was pleased when the actor invited him to be present at the rehearsal When the actor wanted to take the mask off after the rehearsal, it remained stuck to his face. Repeating the posthumous Buddhist name of his father, the young man stripped the actor of the mask with both hands. The actor's face was found streaming with blood.

The aged actor prostrated himself before the young artist, who was asked to relate how he had attained his ambition. The actor, deeply touched by the impressive narrative, made up his mind to wear the mask in atonement at the public performance, at the risk of it sticking to his face permanently The performance was a great success, and from that time on the aged actor did everything he could to improve the young man's economic standing.

In Gengoro's life as a mask-maker, the spiritual elements were more important than anything else, and he actually sacrificed his life to uphold his professional honour Honour was indeed above life even for a mere craftsman, and in the pathetic story of his wife and son we get a glimpse of their professional honour.

(*b*) When a special mission came from Korea in the earlier part of the nineteenth century, the Shogun Iyenari decided to send some folding screens as souvenirs to the King through the Envoy Yusen, whose pupil Hokusai is known better today, was one of the foremost artists selected to paint the screens Yusen worked hard, of course, and his screen bearing " the Eight Views of Omi " was brought to the palace for inspection by high dignitaries The picture was beautifully done with gold dust applied artistically to indicate the distance. Gold dust was thicker for the foreground, while the composition was perfect with houses and trees exquisitely distributed Abe, the Lord of Bungo, who was examining Yusen's work, bent his head a little to one side, and remarked that the gold dust was not used generously enough. Yusen, displeased with the criticism of an aristocratic amateur who expressed his opinion with such conceited air, stepped forward and said calmly, " I have done some little thinking in my attempt at giving a better idea of the distance. I applied more gold dust for the foreground and less for the background " The critic replied that the value of a painting depended on the onlooker's view, to which the artist retorted boldly, " Yes, but it also depends on the person who looks at the picture " In those feudal days it was extremely impudent for an artist to talk back in that way to a high dignitary of the Shogunate The sarcastic remarks of the humiliated artist incensed the critic, and the verbal duel had to be continued.

"What did you say?" demanded the infuriated aristocrat "Do you mean to say that I am not a competent connoisseur?" "Pardon, My Lord," responded the artist calmly, "I would not say so, but I have nothing further to do with this painting." Yusen had made up his mind to sacrifice his life in order to uphold his professional honour. The Lord of Bungo then gave his verdict "You are self-conceited, this picture as it is will not be accepted, work promptly on another painting and submit the new one to our inspection as soon as finished Take this as my official order." The artist would not obey the command, and said "In all ages, vulgar Philistines are incapable of appreciating the works of a foremost artist." Burning with the anger the official connoisseur told the artist to repeat what he had just said, for the insult was unpardonable The stormy scene was finally over when Yusen adjusted his dress and made his exit, saying that he was suddenly taken ill and was unable to stay longer. On his way home, he committed harakiri in the palanquin Yusen, the artist, was at stake and had the courage to sacrifice his life in a true Bushido fashion

(*c*) Toward the close of the Tokugawa Shogunate in the middle of the nineteenth century, there was in the city of Yedo a first class carver, whose name was Hamano Kyozui His family was noted for carvings of small size in ivory and wood In spite of thorough practice for ten years subsequent to his father's death, which had taken place when he was twelve years old, young Kyozui was not worthy of succeeding the distinguished father, not being ingenious by nature. Kyozui's carvings were not popular, and Yorozuya Shimbei was the only dealer in the city who was generous enough to buy his works One day the young artist took to the dealer a comical piece of work which was supposed to represent a badger in the midst of his meditation The figure did not look like a badger at all. In fact, it was nothing, and Yorozuya was so disgusted that he said a carving such as this was really a disgrace to Kyozui's father. Yorozuya told the young man to kill himself instead of continuing to reflect discredit upon the family name. The idea was, of course, to brace him up, but Kyozui who was of a conscientious disposition, took the admonition too seriously. When he came home, the young carver asked his invalid mother for leave of absence for a couple of years. The mother, who sensed what was in the son's mind, did not care to dissuade him "Go and die, my dear," said she, "a fellow of weak will that intends to leave a sick mother would not be of much use, even though he were alive."

Realizing that he was forsaken even by his mother, the faint-hearted carver went into the kitchen to suspend a rope from the main beam The mother, who made her appearance when the young man was about to hang himself, asked him to carve as a memento an image

of Kwannon, the Goddess of Mercy, in whom she believed. He began to work early in the morning the following day, and worked steadily for three days and nights without stopping The sacred image, into which Kyozui put his heart and soul was a splendid piece of work. "Well done!" said the mother with tears in her eyes "This work is worthy of your father." She told the son to take the image at once to Yorozuya and ask the dealer to buy it for forty pieces of silver.

The old man Yorozuya, who wondered if he had to pay for another carving supposed to represent a badger, was surprised to see a wonder-image of Kwannon. The work was so exquisite that Yorozuya suspected the image was a carving left by the young man's father. When the whole story was told, the price as named was paid ungrudgingly, and Yorozuya told the carver to go home immediately, adding that he might not find the mother alive.

Kyozui's mother, who was found dead upon his return, had left a letter reading as follows. "I was pleased with your new image of Kwannon Please work harder and elevate our family name by improving your art"

Where Else Can You Find Such Honourable Workers?

SKILFUL LABOUR.

Some persons (even in so-called higher circles) are never tired of repeating the statements of their mental masters that Japan's progress in industries is simply due to sweated labour and that the "Japanese are mere copyists and we have nothing to learn from them." I am quoting a very high Indian official who greeted me with the above remarks on the morning I landed in Japan to make a report on the Home Industries of Japan He failed to discourage the author of *Secrets of Japan* who during his three years' stay in Japan had closely observed Japan's phenomenal rise in the industrial sphere. I asked him if he had seen a single home-factory and observed the skilful labourers at work. He was so prejudiced that he could only see 'through foreign eyes' and I gave him a copy of my book to reform his views, but he never showed any signs of a desire to learn the truth He was too proud of his ignorance. I never discussed the subject with him again in two months until he left carrying all his ignorance with him.

TRAINED MECHANICS, SKILFUL LABOURERS.

The truth is that Japanese labourers are highly trained mechanics and skilful labourers who really account for Japan's industrial progress. I will relate only two instances

(1) Steam locomotives used on Japanese railways are thoroughly overhauled every three years Thirty years ago a complete overhaul used to take 30 days on an average. But the Japanese labourers developed their skill to such an extent within 15 years that the same work could be accomplished in five days. The work is done without increasing the number of workers. On the contrary, the labour required for this work has been reduced from 900 man days to less than 400 man days. Even American mechanical skill is not able to perform a similar work in less than 14 days, while in England and Germany it is said to take four weeks Remember it takes five days in Japan!

RUSSIA LEARNS FROM JAPAN

The Indian official in Japan referred above thought we had nothing to learn from Japan but Russia did not think so. The Soviet Government sent a staff of railway engineers to Omiya Works of the Department of Railways for the completion of their Five Year Plan. After a few months' stay at the town of Omiya, they returned to Russia and, by copying Japanese methods, they were able to shorten by half the number of days necessary for a complete overhaul of a locomotive which formerly used to take 45 days. The Russians could not shorten the period further The Government of the U S S.R., being desirous of attaining the Japanese standard, approached the Japanese authorities with a view to obtaining the personal assistance of the engineer-in-chief of the Omiya Works Consequently Chief Engineer Kato was despatched to Soviet Russia with a staff of assistants Under his personal direction the time was shortened to seven days. But when the Japanese technicians left Russia, the Russians could not keep up the record Now 11 days are required in Soviet Russia to overhaul a steam locomotive [1]

Let us forget the cheap jibe that Japan manufactures only cheap goods. Think of the Japanese made battleships (I am not in favour of war I love peace but the difficulty is, there is no room for peace lovers in this blood-thirsty world Remember the fate of Iran in the two great wars) Forget the Japanese battleships now sleeping in their graveyards at Manila, Cebu and other places Think of Japan's locomotives Japan's trains have the highest reputation for exactness of time schedules Russia has recently ordered (June 1948) some locomotives from Japan, while we always go West!

BRITISH WERE AMAZED.

Mr Fujihara an industrial magnate of Japan relates this interesting story from his personal experiences about Japan's technical skill :—

[1] From an article entitled " Improvement in the management of working processes " by the committee on production management in the Government Bureau of Industrial Rationalisation

"About ten years ago my Company (the biggest paper concern) placed an order with an English firm for a paper machine designed for a turnover of 1,000 feet per minute....It required engineering skill of a high order to set it up without a flaw. It was for this reason that the English firm insisted on despatching their own erection engineers accompanied by a few assistants. The English machine-builders did not have confidence in Japanese engineers, as might be expected, and wanted me to consent to paying for the service of erection in addition to bearing travel expenses. I was about to accept the proposal and accordingly notified the plant where the new machine was to be installed Contrary to my anticipation the plant manager replied that the Japanese engineers under him were confident that they were capable of setting up the machine. It was also pointed out to me that the whole thing was an important matter of honour and prestige for Japanese engineers. The English firm would not accept my counter-proposal to turn the job over to Japanese erectors, but our attitude was so uncompromising that they finally acquiesced. The Japanese engineers did the entire job "

" Shortly before the conclusion of the erection work at the mill an English engineer and his assistant came unexpectedly to see me in my Tokyo office. They confessed that they had to come over to Japan inspite of my cable message, because it was feared in England that the Japanese engineers might not do a decent job Should the machine fail to turn out paper at 1,000 feet per minute as designed, the poor performance would certainly reflect discredit upon the machine-builders in England "

To cut the story short, the British engineers visited the plant and on return told Mr. Fujihara " The work of the Japanese erectors is perfect and there is not the slightest flaw in the job "

" At the farewell party given in his honour, the British engineer who was gloomy, remarked that Japan would not buy any more paper-machines from England The Japanese are so clever, sighed my guest, that similar machines of splendid workmanship would soon be built in Japan A decade has elapsed since and I recall the English engineer's prediction with mixed feelings," concludes Mr Fujihara.[1]

INVENTIVE GENIUS.

No wonder Mr. Mauretta, Assistant Director of the International Labour Office in Geneva said : " Japanese workers are active, enthusiastic, happy and efficient They are very intelligent people and I consider them to be the most valuable capital in the Japanese nation."[2] The workers in India (given proper training) have the same reputation.

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[1] The Spirit of Japanese Industry, pp 79-81

[2] Japan Advertiser, April 21, 1934 " Outline of the Works," Amiya Works, 1933

But one thing I notice in Japanese worker is his aspiration to higher places. He is always ambitious He aspires to foremanship, engineership and so on. He is always trying to make use of his born inventive skill and his ambition contributes in no small degree to the development of Japanese industry. Among the 2,000 employees of the Omiya Works of the Department of Railways, there are about 50 to 60 people every year who receive rewards for useful inventions or improvements This factory has the following committees composed entirely of workmen :—

(1) Mutual Enlightment Committee Its object is improvement of work in general and increase in efficiency

(2) Economy Committee Its object is to effect economy in materials, stationery, rational use of materials, use of by-products and idle stocks.

(3) Safety Committee aims at industrial safety

(4) Works Committee aims at improvement in working methods and tools and machinery

(5) Process Committee discusses time table and manner of work.

(6) Locomotive Committee
(7) Carriage and Van Committee
(8) Electric Committee

} They look after construction and repairs of locomotives, carriages and rationalisation in the methods of repair

(9) Locomotives Overhaul Process Committee

The workshop therefore serves not only as their source of bread but also as a laboratory to studious workmen who aspire to rise.

LOVE OF NATURE.

The employers in Japan always encourage workers to develop love of Nature which exercises a healthy influence on the workers' efficiency. Every factory plants flowers and trees to satisfy workers' love of Nature. Workers are taken out on pilgrimages to distant temples or shrines, they climb mountains, bathe in hot water springs, go to rivers, lakes and spaws and enjoy boating, fishing and swimming.

Most factories issue factory newspapers and periodicals. A page or two are devoted to contributions of poetry from the workers

BENEVOLENT GOVERNMENT.

The Government played a very important part in Japan's industrial progress The Japanese Government brought samples of machinery from all parts of Europe and America. This was the most recent and precise "up-to-the minute" kind. The Government sent

large numbers of promising youngmen abroad to study various industries for two to five years. Young professors and engineers were sent abroad in large numbers to study on the spot modern methods of production They brought back with them text books and machinery beside the expert knowledge they had gained personally. Sometimes they would bring back two sets of machinery, one to run and the other to rot They would try and see if they could reconstruct it, and if they succeeded in doing so, they would try to make improvements on it. The Government spent ungrudgingly on these experiments

MODEL FACTORIES

Then 'model factories' were started at Government expense. Government would run these factories from five to ten years. After it was sure that the factory could be profitably operated, only then would it be handed over to private concerns Most industries of basic importance in Japan, thriving today, owe their origin to Government guidance or government initiative according to Dr Iwao Fujisawa whose lecture I heard before the war.

NO ILLITERATES IN MY COUNTRY

Mass literacy is another great secret of Japan's industrial success. Credit for this goes to the farsighted Emperor Meiji, who started a crusade against illiteracy eighty years ago

The Emperor in a solemn vow declared :

"*There shall not be a village with an illiterate family, nor a family with an ignorant member in this country*" As a result of that vow Japan enjoys 99.58 per cent literacy today. I can never forget my first experience in Japan on the 12th of September 1933 I had landed the previous evening and had no news of Gandhiji's fast I went to bed that evening early since I was tired. Next morning at 5-30 the sweeper woman in the hotel greeted me with "good morning" and the first question she asked me was "Do you know the latest about Mahatma Gandhi's health?" I said "No" I did not know but I was anxious to know She replied, "He has broken his fast and he is out of danger" "How do you know?" I asked her. "Why, I have read my morning paper, I always do that before I start on my morning rounds." Who can beat that! It is this passion for knowledge that has made Japan literate in seventy years with the result that every worker can read about the latest scientific inventions and new designs in his industry and rise to the highest post.

CHEAPEST TRANSPORT.

The cost of transportation has an important bearing on the progress of industries

The United States has an abundant supply of iron and coal, but the cost of transportation is an important item in shipping iron to New York from Pitsburgh. The rate of freight by rail per ton was 3 25 dollars before the war, *i e.*, about eleven rupees per ton.

In Japan transport was much cheaper. Iron could be brought to Japan on steamships from the South Seas at 5 yen (four rupees pre-war price) per ton and from China and Manchuria at two to three rupees per ton It will be seen, therefore, that so far as the cost of transportation is concerned, Japan is in a more advantageous position than the United States It is expensive to ship other raw materials from the Atlantic seaboard to the Western States and *vice versa.* Lumber is cheap in Oregon (Western U S A.), but the freight charges make it expensive when shipped to the Eastern States Owing to lower ocean freight between Scandinavia and New York, pulp produced in the Seattle (Western U S A) area cannot meet the competition of European pulp on the Atlantic sea board It is true that the natural resources of a country constitute a great national asset, especially in time of war, but in the time of peace the United States, which is self-supporting in many respects, is not altogether better off industrially, because it is the cheap transport that decides the issue.

On the contrary, Japan, an island, can bring raw materials from any country at lower cost. Japan is poor in natural resources, but she has the geographical advantage of being situated near China, Manchuria and the South Sea Islands, which are rich in the raw materials needed in Japan, and with her cheap transport Japan could, before the war, import all raw materials at a very nominal cost. Cheap transport is a great blessing to Japan and so is cheap electricity (Read full story of electric power in another chapter)

DECENTRALISATION

Japan's industrial system is very ably organised by the Government of Japan. It is not centred in a few cities or urban areas but the rural areas contribute their full share in industrial progress since the system is based on decentralisation

Discussing the importance of the decentralisation of industry, Professor John E Orchard of Columbia University wrote in 1930[1] —

Japan is especially well adopted to the decentralisation of industry In our country also the same opportunity exists for the development of village manufacturing. The surplus of population is in the villages and it prefers to remain there. The farmers live in small communities, and the prevailing form of agriculture with its very small holdings creates both the spare time and the necessity for a subsidiary occupation Japan is a country of short distances and raw materials and

[1] Japan's Economic Position, 1930, pp 486-7.

finished goods can be moved easily There is abundance of water power and there are few sections of the country that are not within easy reach of a potential power site.

But the strongest argument for decentralisation is the fact that much of the Japanese industry is already in the villages and is carried on, for the most part in relatively small units. This rural industry is a heritage of the domestic manufacturing of the feudal period, but it may also be a forerunner of a new and saner industrial system that is destined to supplement, if not supplant, the ready made industrial order from the Occident. Even the new factory industries are showing some tendency to decentralise, for it is the policy of the large cotton spinning companies to establish branches not in crowded urban centres but in rural areas within easier reach of labour supply.

A Classless Society

As I have stated in another chapter the eighty million people of Japan behave as members of one family There are very few distinctions between the rich and the poor. The rich are not vain, snobbish or untouchable. The Japanese are on the whole a classless society. The rich and the poor work together, eat together and enjoy together I have attended dozens of functions where the multi-millionaire factory owners freely mixed and dined with their workers Professor G C Allen writing on the subject concurs with my impressions when he says —

"Japan presents a marked contrast (to England) The Westernisation of the country is, of course, creating classes that bear some resemblance to those in Europe, but emotional dispositions associated in Europe with those classes have not yet appeared in Japan Snobbery, though it exists, is not a prominent feature of life in that country Intercourse between classes is easier than in England and there is much greater uniformity of manners. In a large English undertaking it is usual for the directors and higher executives to have one dining room, the clerical staff another, and the operatives a third But it is quite common in Japan for everyone to sit down together in the same mess-room ; frequently even separate tables are not provided for the officials and directors, who take any place that is available among their workers . . and it is not an exaggeration to say that from a social standpoint they are far more democratic than the Anglo-Saxon nations There is no special provision of schools and colleges for different social classes as in England "

Skilled and Contented Labour.

I have not visited Russia, but have visited other European countries, America, and the East and if anything has specially impressed me in Japan, it is the cheerfulness, honesty, skill and contentment of

the worker whether man or woman. Slums exist in London, New York and also in the industrial centres of Japan, but in Japan they are in much lesser numbers than in England and America. The slums of New York, and London are in some cases worse than those of Japan, but as a rule (of course, there are exceptions) Japanese labourers living in the slums are more contented, cheerful and honest than their counterparts anywhere else in the world However there is great scope for improvement.

SECRET OF CONTENTMENT.

The workers in Japan, especially in the textile mills (some of which I have personally seen) are generally contented because of the excellent treatment afforded to them by their employers

Large dining halls with chairs and tables (having "ready lunch" boxes), up-to-date cinema and theatre halls, parks, neat and well-ventilated rooms (for residential quarters), free schools for education in literature and fine arts, such as painting, music, dancing, tea ceremony, up-to-date and well kept hospitals for labourers are some of the things that I have personally seen in labour areas in Japan The free hospital for labourers that I saw in Kanegafuchi Mills in Kobe was decidedly much better in all respects than the former Civil Hospital in the Capital of India Any visitor to Japan can see things for himself and I would request the millowners of my country to pay a visit to Japan and study the secrets of Japan's success instead of being misled by the false and interested propaganda of those who have been beaten by Japan in the industrial field

When the millowners and industrialists of India visit Japan they will themselves realise that (1) honest and skilled labour, (2) kind treatment of the workers and (3) simple and inexpensive management are mainly responsible for Japan's industrial success

It is true, no doubt, that labour in Japan is cheaper than in Western countries The reader will ask how labour remains contented with low wages in Japan.

FAMILY SYSTEM

The secret lies in the family system which teaches co-operation and individual sacrifice for the common good of the family.

We must not forget in considering the life of workers in Japan, a peculiar circumstance hardly paralleled in any other country in the world The family system is still a powerful basic factor in the daily life of the Japanese In Japan the family system began with the history of the race Not only in spiritual culture, but in economic development, the family or tribe always constituted the unit. With the Restoration of 1868 Japan adopted the modern industrial system and the development of liberalism in the Western sense of the term

was remarkable, but this Westernization of Japanese society has, in no way, destroyed the family system which has been the foundation of the Japanese social system for over three thousand years. The new economic system founded on liberalism or individualism has been skilfully harmonised with the old family system, and there has been created a peculiar mode of life Since the First World War, the economic system of Japan has rapidly developed into the most extreme form of capitalism. The daily life of labourers is, however, still controlled by the idea of the family unit. Their incomes and expenses are treated as problems of the family as a whole. Thus, in the case of the textile industry, which is the representative industry of Japan, a woman worker puts her wages into the pooled income of the family to which she belongs and gets her proper share with other members of the family. The same is the case with skilled men workers. Such a system enables many workwomen and juvenile workers to serve in factories for wages below the ordinary level In other words, women or juvenile workers who cannot keep themselves independent can do so in common with the other members of the family. It is therefore erroneous to judge the standard of living of Japanese workers by the wages they get. The existence of the family system must always be taken into consideration in studying the life of the Japanese labouring class.

Simple Home Life.

Now let me present the readers with opinions of responsible public men and the press on the subject of the "Simple Needs of the Japanese."

President Tsuda of the Kanegafuchi Company does not overstate the case in saying. "That the living conditions of the Japanese spinning workers are much better than in England, is admitted by all Englishmen who have personally inspected the conditions of the Japanese spinning industry. The only difference is in the mode of life in the two countries In other words, it is the question of the difference between cheese and pickled radish, the latter being eaten in Japan in the same manner as cheese is in England," radishes being far cheaper than cheese Developing this idea, another Japanese says "Transplant a Japanese millhand to Lancashire, give him an iron bed with a soft mattress, put him on a ration of bread and butter, beef-steak, coffee and cream, and he will go on strike, demanding Japanese bedding spread on a matted floor, and a ration of fish, rice and vegetables which, to him, are more palatable and wholesome It is the misfortune of the British or American millowner that his standard calls for higher-priced materials than the Japanese, that is all"

Englishman's View.

"Such advantages as Japan enjoys as a result of her depreciated yen may be short-lived," wrote the special correspondent of the

Spectator, London, "but there will still remain permanent elements in her industrial fabric which will make her competition increasingly formidable for an indefinite period One of these, of course, is the standard of living in Japan To call it a low standard begs the question It is Japan's standard, a standard with which she is satisfied, and it should be described less as low than as simple and inexpensive. Measured in terms of contentment, it would be hard to say that the Japanese worker lives on a lower standard, or leads a less agreeable life, than an English worker. Japanese labour is certainly not sweated or oppressed Without any such stimulus the average Japanese works hard and takes an interest in his job, and with a thoroughness which a competent observer acquainted with both countries sometimes misses in Lancashire For better or worse, and in some respects no doubt it is for better, the average Englishman does not think of trade and industry as the chief business of life The average Japanese and Chinese do, and the result is that the factory and the office in Japan or China is animated by a kind of convinced determination which is absent or deficient in Western countries"

UNITY OF PURPOSE

This "convinced determination" has been noted and emphasised—so far as Japanese industries are concerned—by such trained and unprejudiced observers as Messrs. Sansom and Kermode, attached to the British Embassy in Tokyo In their report to their government they said.

"One cannot escape the impression of a rare unity of purpose and concerted effort Such reflections as these may seem out of place in an economic report but it is difficult to understand the position and the prospects of Japan as a modern industrial state without appreciating the national spirit which shapes her activities. The industrial growth of Great Britain, and even of more deliberately organised states has been haphazard in comparison with the development of Japan, which has been the result of a policy aimed at making the Japanese Empire an economic unit as completely self-contained and self-supplying as physical limitations would permit. The assistance given to industry by the state in terms of money is of comparatively modest dimensions; and the principal form of government help is probably protection by import tariff. Apart from such measures, however, the Japanese Government is not backward in taking positive steps to direct the course of industry and trade by legislation Thus in pursuance of a declared policy of 'rationalisation', a law for the control of staple industries was enacted in 1931, by which the competent Minister of State is empowered under certain conditions to force a minority of persons engaged in a staple industry to participate in an agreement made by the remainder for the control of production or

sales," the Minister usually exercising his authority to prevent over-production and to increase the price of exports instead of decreasing it. "In 1931 also, amendments were made in the laws governing manufacturers' guilds and exporters' guilds These guilds are composed principally of small-scale manufacturers and traders, and the changes in question were made, to quote an official memorandum, 'in order to hasten the process of rationalisation.'"

MORE SECRETS.

"Rationalisation" is a word more common among the English-users of Japan than anywhere else in the world corresponding to the frequency of use of its Japanese equivalent This is because the process it denotes is so much to the fore. "Rationalisation" is used in Japan to denote the application of carefully reasoned processes to every branch of industry, including, of course, sales programmes. Nine pages are devoted to it in the current issue of the *Japan Year Book*, from which a few citations may be useful in illuminating some of the secrets of Japan's industrial success .—

"Rationalisation, like one's ideal, can never be complete The standardisation of equipment, machinery, tools, implements, etc., and the simplification of merchandise are known to form the basis of technical side of the rationalising process. It enables producers to reduce the costs of production through homogeneous mass production, economises expenses for the sellers by relieving them from carrying unnecessarily large stocks, and also by facilitating their transactions; while the consumers, too, are greatly benefited by being able to buy cheaply and make more accurate selection For these reasons many countries have each a special organ devoted to this purpose of standardisation and simplification In this country, a board to investigate the standardisation of industrial arts was established as early as 1921, and efforts have ever since been made to determine the best standards for any industry and to disseminate knowledge of and encourage the adoption of the standards thus determined. With the establishment of the Rationalisation Bureau, the work of this Investigation Board was brought under its jurisdiction The number of standards so far fixed by the Board is 106. The result of their use and dissemination has been very satisfactory, the most conspicuous case being in Government works The Yawata Iron Works, which hitherto manufactured 657 kinds of articles, has limited their number to 120 in conformity with the principle of homogeneous mass production. As a result, not only has the amount of steel manufactured there increased considerably, but the coal-consumption per ton of steel has been reduced, contributing to a great reduction in production costs It may be added that the Board is a member of the International Standardisation Society, thus contributing to the standardising movement among nations."

BETTER ORGANISATION.

Rationalisation in Japan has been so successful that Dr. Arno S. Pearse, for many years General Secretary of the International Federation of Master Cotton Spinners' and Manufacturers' Associations, with headquarters in Manchester, agrees with Mr. Moser of the United States in the view that no cotton mills anywhere are better organised and managed than in Japan

For example, Dr. Pearse comments on the absence of hedging —the protection of an investment or speculation by taking some offsetting risk "It was a great surprise to me," he writes, "that not one of the big combines and very few, if any, of the financially weak mills hedge their cotton purchases I was assured time after time that it is quite a common occurrence for these combines to have thirty thousand or fifty thousand bales and at times even eighty thousand bales unhedged" By this practice, uncommon in England, they reap handsome, often enormous profits from purchase of raw materials when the market is right

Again, the Japanese method of mixing raw cotton of various staples so as to produce yarns or fabrics of various grades to meet the tastes and requirements of the countries to which they are shipped impressed Dr Pearse as "an art of which the Japanese mill managers are justly proud" "It is a secret jealously guarded by all mills," writes Mr. K. K Kawakami in *Foreign Affairs* "The protection of the various materials in the mixture varies to harmonise with the local conditions of the purchasing countries The Japanese mills endeavour to produce what the purchasers want, and not what they think the purchasers should like. That is why Japanese cotton goods have won new markets."

EFFICIENT MANAGEMENT.

That is one reason, but it is not the main reason. The main reason is to be found in efficient management and the use of down-to-the-minute equipment. This has already been emphasised. It is driven home by President Tsuda in a comparison with England. England has fifty million spindles, Japan some eighty million, or only 16 per cent Yet in 1933 Japan outdistanced England in cotton exports!

Recapitulating the factors in Japan's industrial success, we may strike out as false inferior goods, sweating, and dumping Up-to-date equipment, scientific management, including sales management, government supervision, and, above all, hard working, skilful and contented operatives, are other factors that contribute towards success

Let me refer to an article by M. J C. Balet in *Le Monde Nouveau* which strikingly confirms the above conclusions He says: "People do not work and sell at a loss for long, and especially do not do so

deliberately. To speak of Japanese dumping is nonsense. Not only does Japan not sell at a loss in relation to internal prices, but in fact her export prices are not lower than those of the internal market. Moreover, her industrialists receive no subsidies. Japanese commercial success has much simpler causes, such as —(1) The urgent necessity, first, of living, and next of assuring the future of a prolific race crowded into a poor and small archipelago ; (2) A great national ideal served by unequalled discipline and will; (3) A marvellous sense for the assimilation and adaptation of the most perfect scientific processes "

" All these causes," he says, " will be insufficient to explain Japan's extraordinary success if we forget that besides all kinds of dumping (the work of men) there is also a social dumping (the work of centuries) which favours some countries to the detriment of others This arises from the difference in living standards among different people Generally, nations with low standards are behind high-standard nations with respect to science, production, and commerce But let us suppose that a nation, while keeping a low standard of living, raises itself to a parity with the first nations of the world in power and civilisation In industrial and commercial competition it will then have a superiority equal to the difference in the living standards Such is precisely the case of Japan, a case without precedent in history It is in this social dumping (which, however, grows less and less as the Japanese living standard gets nearer that of the nations which have been its model) that the fundamental reasons for Japanese expansion must be sought."

GENEVA OFFICIAL'S VIEW.

Another French authority, M. Fernand Maurette, visited Japan in the spring of 1934 to observe industrial and labour conditions on behalf of the International Labour Bureau (at Geneva), of which he was vice-director " I must say," he is reported to have said, " that my impressions have been very good I have seen many factories, have observed conditions in them, and have discussed problems with competent government officials and labour leaders I have found a very good spirit in the factories and among the workers Japanese labour organisation and the rationalisation in the factories are impressive, but still more impressive, I have found, are the Japanese workers. Active, enthusiastic, happy and efficient, they are very intelligent people, and I consider them to be the most valuable capital in the Japanese nation However, Japan's commercial expansion has raised the question of the Japanese standard of living Western people do now know how the Japanese workers live. The cost of living is cheaper here, but I do not see any low standard of living And it is this fact—the high level of the Japanese worker and his living standard—that must be explained abroad more frankly and clearly by Japan."

BRITISH INDUSTRIALIST'S TESTIMONY.

Nothing can support my conclusions better than the frank statement of Sir Harry McGowan, K.B E , Chairman and Managing Director of Imperial Chemical Industries, Ltd., in a recent article in the *Crown Colonist*

The British industrialist's following opinion should serve as an eye opener to Indian millowners. He says :—

" There has probably never been a trade phenomenon which has developed so rapidly as Japanese competition Four years ago it was hardly showing above the Eastern horizon, a little cloud no bigger than a man's hand, but now it has covered practically all the markets of the world It may be interesting to consider for a moment what lies behind this development, and what has enabled Japan to develop a trade with such amazing speed and to undercut older established trade rivals so drastically. The driving force is supplied by Japan's need to sell goods abroad in order to maintain some equilibrium in her trade balance. Her rapidly growing population make it imperative for her to sell more goods abroad The second factor is the depreciation of the yen Originally forced on her by necessity, a depreciated currency has advantages which Japan has not been slow to recognise As we know in Great Britain, the depreciation of the £ sterling, following the abandonment of the gold standard, enabled us to recover a substantial part of the international trade we had lost during the preceding year when the £ was over-valued Roughly speaking, the £ was depreciated in those days by about 35 per cent., but Japan has outbid us in competitive exchange depreciation, and the yen now stands at a gold discount of 63 per cent , without any guarantee that it will not go lower."

EFFICIENT ORGANISATION.

" The next important factor is the efficient organisation of those Japanese industries around which competition principally centres, and the deliberate planning of her export campaign. Japan industrially is a new country, which has sprung almost fully armed, into the industrial arena. She has, therefore, been able to build factories on the latest plan, incorporating the most modern machinery, and in short, to pick and choose among international industrial practices, and adopt that which was best suited to her needs. She has shown great wisdom in buying only the finest and most up-to-date types of machinery. She has organised her industries in large-scale units. Further, she has evolved a system of industrial and Government co-operation in the conduct of export campaigns, by which means the advantages of exchange depreciation and efficient production was translated into concerted efforts overseas "

HAPPY WORKERS.

"There has been much loose talk of long hours and low wages in Japanese industry. It is true the Japanese work long hours. It is true also that their standard of living is lower to our Western eyes. But while I was in Japan last winter, I made a tour through Japanese factories and was able to find no outward signs of malnutrition, lack of physical energy or discontent among the workers, which might be expected to be evident were they really overworked or under-nourished. As the Japanese ambassador said the other day, though the Japanese worker does not eat roast beef and potatoes, he would not choose them were he able to afford them. The Japanese worker keeps fit and happy on his—to our minds inadequate—ration of fish, rice and vegetables."

BUSINESS METHODS.

"There is one more factor which makes for Japan's success, and that is her realisation that the needs of the present age are for goods where price is more important than quality. In a time of world depression, price is the decisive factor in purchasing. Japan has realised this more than any other nation. Her manufacturers and merchants have also realised the necessity of studying the needs of individual markets, and have been at considerable pains to give each customer what he wants at the time and place that is wanted and patterned, designed and packed in a manner to please his particular fancy. The Japanese deserve credit as pioneers. They study the customer's demand for prompt and even immediate delivery they quote in his own language and no Japanese, and express units of quantity and price in the measurements of his country and not their own.

The strength of Japanese competition lies in the interdependence of these factors. It is impossible to say which of them counts most, since they are all co-ordinated to produce the desired result. How far they have succeeded we already know."

WHAT BRITISH MISSION FOUND.

Here is a summary of the British Industrial Mission's report, reproduced from the *Times*, London :—

On the question whether the success of Japanese industry is due to the level of wages and the conditions of work, the report says :—

"Japanese wages are low in terms of money as compared with those paid in, say, Great Britain. It is, however, not the money wages which count but the question whether the wages received enable the workman to satisfy his requirements and to live the life he desires. In considering the standard of life in Japan as compared with that of western countries, there is one point above all which must be borne

in mind—namely, that the standard in Japan is totally different in nature...."

"The question for the future is: Will a standard of life approximately similar to that which exists today continue to satisfy the work people of Japan, or will there be within measurable time a serious rise in the cost of labour? Our own opinion is that as the industrial activities of Japan develop, new desires will be created which will tend towards a higher level of wages, but that this process will be gradual and is not likely substantially to affect the competitive power of Japan for some years to come in normal circumstances. There are certain quite definite factors which operate in favour of the retention of low money wages in Japan"

CONDITIONS DIFFER

"Although the conditions of factory labour in Japan cannot compare with the more expensive standard prevailing in Great Britain, it is a mistake," the report says, "to consider them as a whole unsatisfactory from the point of view of the Japanese workman. The above remarks, both as regards wages and conditions of labour, refer to the factory industries of Japan. We are well aware that in addition to the factories there is a large part of Japanese industry, especially in the lighter trades, which is carried on in the homes of the people. We had no opportunity of investigating this for ourselves, but we were informed that conditions in these home industries are very far from satisfactory, and that they represent a factor in Japanese economic life, free from factory regulations, which tends to depress both the level of wages and the standard of life of the whole economic organisation.

"One advantage that Japanese industry has over British, it is remarked, is that the per capita burden of public debt in Japan at present is extremely small compared with that in Great Britain. Another cause which has contributed to Japanese industrial progress is the rapid spread of rationalisation and co-operation in buying, manufacturing and selling."

NATIONAL SPIRIT.

Of all the secrets one that impresses a foreigner most is the Japanese national spirit.

To illustrate this spirit prevailing in Japanese industry I may quote a few passages from the Factory Rules published by a bicycle factory. [1]

Song of the One Heart Band (Ishindan)
X Y Z Bicycle Factory. (Literal translation from the Japanese)

[1] Made in Japan.

However overwhelmingly the wages of the world's seas
May come on like flooding tides,
The One Heart Band'll rouse itself, sturdy as a rock,
With its iron arms of co-operation.

With the power of righteousness and the heart of chivalry,
Helping the weak and holding the strong,
Our brotherhood goes even through fire and water,
Of which the One Heart Band is proud before the world.

Looking forward to a Utopia of co-existence
Where our noble ideal is attainable,
Lo ! the One Heart Band'll shine for ever
Gloriously with its glaring zeal

Then follows 'The General Plan' of the X Y Z Concern:

We, with a view to assisting national industrialisation, shall try to develop social enterprises by the brotherhood organisation of the working masses

We, with a view to promoting the interests of the consumers at large, shall primarily aim at establishing a most rationalised system of producing and distributing bicycles

We shall try fully to protect the interests of each member of our concern and secure him or her an appropriate means of living.

We, with a view to promoting the common interest of our factory, distributing stations and agents, shall try to realise the unification of the whole enterprise as one and the same heart and body

Each member shall try intently to promote the interest of all members and shall never forget the demands of the whole body. No member shall do anything against the interest of the whole

We, with a view to continuously strengthening the position of all members, shall aim at establishing a rational system of (consumers' or employees' ?) credit as early as possible

Next comes the works rules, at first for apprentices.

Qualification for Employment: Age—15 to 17 Education: Graduates from the higher primary school course who have passed the entrance examination of the management Work. The Factory Laws shall be applied, while the private regulations of this factory shall be observed when necessary. Apprenticeship. Any employee shall be an apprentice until he is fully 21 years old Those who begin work after that age shall remain apprentices for the next four years of their employment.

The monthly pay for apprentices is fixed as follows:

First grade, 20 yen; second grade, 18 yen; third grade, 16 yen; fourth grade, 14 yen; fifth grade, 12 yen, sixth grade, 10 yen; seventh grade, 8 yen; eighth grade, 7 yen; ninth grade, 6 yen; tenth grade, 5 yen, probationary grade, 4 yen. Every apprentice shall be on probation for one year of employment.

Apprentices get the following allowances in kind: Food (estimated at about 35 sen a day) · bedding to be lent free of charge Each apprentice shall be supplied with soap. Dwelling quarters are free. Twenty-five bath tickets a month will be given to each apprentice. Health insurance fee will be paid by the management.

The bonus system for apprentices is regulated as follows:

(*a*) Reward for regular attendance. Every apprentice who attends all the working days of the month will get one yen. (*b*) Periodic Bonuses (1) At the end of the first half of the company's business year, every apprentice who has served for more than six months will get a bonus of 10 yen. those who have served longer will get an additional reward of one yen for every six months' service. Those who attended every work-day in the first half of the year will get a special reward of 8 yen. In connection with the last reward, each case of part-time absence by attending too late or leaving too early will decrease the sum by 50 sen and each case of a full day's absence by 1 yen (2) At the end of the year, the general reward of 15 yen; the longer-service reward of 1 50 yen for every six months' service, and the full-attendance reward of 8 yen will be given to every qualified apprentice. Every apprentice who reaches the conscriptional age during his employment will get 25 yen for each year after the probation.

Absence is permitted, for instance:—

When the apprentice's grandfather, grandmother, father, mother, brother, or sister dies, for 7 days if the funeral is performed in this city, or for 7 days in addition to the period necessary for the trip to the native place where the funeral is performed.

At the end of every financial year, 10 per cent of the net profit for the year will be set aside as a fund for relief, consolation, and other co-operative purposes of the workers.

For regular workers there are similar rewards, a two weeks' trial period, and more regulations:

The work-day begins at 7 a m. and ends at 5 p m The hours may be changed if necessary There shall be the following rests every day. 15 minutes between 3 and 4 in the afternoon

Holidays are as follows The first and third Sunday every month. 5 days at New Year, 2 days in July, and 4 Great National Holidays: the New Year's Day on Jan. 1, the Anniversary of the Foundation

of the Empire on Feb. 11, the Emperor's Birthday on April 29, and the Anniversary of the birth of the late Emperor Maiji on Nov. 3.

Workers are forbidden to play with fire or to smoke in the factory. They shall neither sing loudly nor gossip.

Wages will be calculated and paid on the 14th day of the month in first half of the year, and on the last day of the month in the latter half of the year.

The rules have undergone some changes since the end of the war but the same spirit prevails in every industry in every town and every village despite American occupation.

What occupied Japan has achieved free India can also do.

Only we need mobilisation of national spirit and our sixty crores hands.

CHAPTER III.

NATURAL RESOURCES

AREA AND CLIMATE

POPULATION

AGRICULTURAL PRODUCTION

424 RESEARCH INSTITUTIONS

SERICULTURE

WORLD'S FOREMOST FISHING COUNTRY

MARINE PRODUCTS

AQUICULTURE

FOREST WEALTH

WOOD PRODUCTS

WOOD IS LIFE-LINE

PULPWOOD PRODUCTION

BY-PRODUCTS BRING MILLIONS

MINERAL RESOURCES

MUST RAW MATERIALS BE INDIGENOUS?

MYTH EXPLODED BY JAPAN

INDUSTRIES DEPEND ON IMPORTS

INDIA CAN ALSO DO IT

CHAPTER III.

NATURAL RESOURCES

Japan like Kashmir is Nature's own garden The whole of Japan is a bigger Kashmir with the difference that it is a chain of beautiful islands. Japan, with her charming scenery, numerous spas and health resorts, her exquisite arts and crafts, her courteous manners and ancient customs, is justly famous as an ideal all-time holiday-land. Next to the United States of America I am so fond of Japan that I would vote for Japan being the headquarters of a World Government, if ever it comes into existence Every country has beauty, but nothing surpasses the beauty of the inland sea of Japan The Irish Sea near Cobh may claim a tie Japan is Nature's favourite child both in gifts and tragedies like earthquakes and typhoons The quakes and typhoons are natural tests of Japanese fortitude, patience and fellow feeling No other country faces so many and so disastrous tragedies as Japan but every tragedy leaves Japan stronger than ever. What a strange gift of Nature that makes the Japanese a most mysterious nation that does not cry as we in India do!

AREA OF OCCUPIED JAPAN.

The more Japan tried to expand to solve the problem of her extra millions the severer has been her punishment as far as her area is concerned Today she has lost 47 per cent of her territory and occupied Japan as defined by General MacArthur's Government consists of four islands—Hokkaido ("North Sea District"), Honshu ("Main Island"), Shikoku ("Four Provinces") and Kyushu ("Nine Provinces" in the south) and the approximately 1,000 adjacent small islands She has lost several important strategic island groups besides Korea, Formosa and Manchuria, all acquired by sword. Today Japan, which has an area of 147,000 square miles and a population of nearly 80 million, is one of the most densely populated countries in the world [1]

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[1] SCAP Report on Natural Resources is the main source of information in this chapter.

I.—AGRICULTURE

A. *General statement:*

(1) Agriculture is the most important single industry.

(*a*) More than 40 per cent of the national capital is invested in it[1];

(*b*) Approximately 47 per cent of the population derives all or part of its income from agriculture.[2]

(2) Principal features of Japanese agriculture.

(*a*) Small cultivated area in relation to large agricultural population;

(*b*) Smallscale farming;

(*c*) Widespread development of tenancy[3];

(*d*) Emphasis on food production;

(*e*) Predominant position occupied by rice crop.

(3) Agriculture has provided 80 to 85 per cent of the food requirements of Japan during the past twenty years.

B *Economic factors:*

(1) Intensity of agriculture is reflected by the following facts.

(*a*) Only 14,208,000 acres or 16 per cent of total land area is used for cultivation;

(*b*) Approximately there are 5,698,000 farms in Japan compared to about 6,800,000 in the United States;

(*c*) The average acreage of a Japanese farm is 2·49 acres. Median acreage is 1·64 acres [2]

(2) Agriculture in Japan is gardening rather than farming.

(*a*) Most work is done by hand with primitive tools, but these tools are well suited for their use;

(*b*) Production per unit area is high but production per man is low;

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[1] Estimate of Japan Hypothec Bank as of 1946.

[2] Results of Agricultural Census conducted by Ministry of Agriculture and Forestry as of 26th April 1946.

[3] As a result of the land reform laws passed by the Japanese Diet on 11th October 1946, it is anticipated that before 1949 tenants on approximately 2,000,000 of the 2,600,000 cho of land now cultivated by them will be able to purchase the land they cultivate One cho equals 2 45 acres.

(c) Many fields are made to produce two or more crops per year.

1. Practised widely in central and south-western Japan.
2. Area under cultivation enlarged one-third by multiple cropping.

C. *Land development:*

(1) History.

(a) Land reclamation has increased the arable land area of Japan by seven per cent or 896·000 acres from 1910 to 1939 The arable land in 1939 was 14 ,750,000 acres The arable land area decreased by three per cent or 432,000 acres from 1939 to 1944, chiefly owing to military and industrial uses of land;

(b) Progressively the expansion of the arable land area has become more difficult. Land now under cultivation includes most of the more productive agricultural areas of Japan.

(2) Present reclamation potentials.

(a) An estimated 3,900,000 acres of additional land could be brought under cultivation by the expenditure of comparatively large amounts of capital, labour, and materials. After being reclaimed, much of this land probably would be marginal. Reclamation of such an area would add 25 per cent to the present arable area of Japan ;

(b) Production on large areas of cultivated land in Japan can be increased by grading, irrigation, drainage, and storm and flood protection.

D. *Agricultural production:*

(1) Six crops furnish 85 to 90 per cent of calories in Japanese diet from indigenous sources ; rice, wheat, barley, naked barley, sweet potatoes, and white potatoes.

(2) Rice dominates agricultural economy.

(a) Rice occupies approximately 53 per cent of the total cultivated area, and about 42 per cent of the total crop area ;

(b) About 96 per cent of rice grown in irrigated low-lands ;

(c) Rice better adapted than other cereals to long growing season, high summer temperatures, and the heavy rainfall in Japan ;

(d) Wheat and barley, next in importance, require temperate climatic conditions, *i.e.*, grown in summer months in northern Honahu and Hokkaido, but in winter months in central and south-western Japan ;

(e) Sweet potatoes limited largely to areas south of latitude 38°N., while white potatoes grown extensively north of 38°N.

(3) Sericulture suited to Japan because of mild winters, humid climate, and abundant supply of cheap labour.

(a) Northern limit approximately latitude 40°N ;

(b) Limit determined by winter survival of mulberry.

(4) Tea production extends north to about latitude 37°N.

(5) Livestock of minor importance in Japan.

(a) Production of livestock products requires four to six acres to produce as many calories as can be obtained from one acre of cereals.

(b) Japanese depend on fish and plant sources for most of their proteins.

E. *Research :*

(1) 424 institutions have primary function of agricultural research.

(a) Research conducted by imperial and prefectural experiment stations, imperial universities, prefectural agricultural colleges, private institutions, and corporations ,

(b) Experiment stations are small and highly specialised.

(2) Application of results of research has caused significant increases in agricultural production

(a) Yield of silk per hectare increased 400 per cent from 1890 to 1940 ;

(b) Yields per unit area of rice, wheat, common barley, and naked barley increased about 70, 140, 119 and 62 per cent, respectively, from the 1878-82 period to the 1938-42 period.

II.—Fisheries

A. *General statement:*

(1) Prior to World War II Japan was the foremost fishing country in the world.

(*a*) Annual catches in home waters were 2,500,000 to 3,500,000 metric tons; catches overseas including those from colonial waters amounted to an additional 2,000,000 to 3,500,000 tons. Total Japanese production of marine products accounted for more than one-fourth of the world's total;

(*b*) Full-time and part-time fishermen in Japan numbered about 1,500,000;

(*c*) Japanese fishing boats numbered about 355,000 of which 75,000 were powered;

(*d*) Japanese fishing operations were world-wide.

(2) Fishery products provided most of the animal protein in the Japanese diet.

(3) Although the greater part of the Japanese fishing products were consumed at home, the production provided needed exports for Japan's trade balance

B. *Explanation of emphasis upon fishing in Japan:*

(1) Dense population with meagre food resources.

(2) Insular character and great length of coastline.

(3) Coastal concentration of the population.

(4) Excellent fishing grounds where warm and cold ocean currents converge.

C. *Fishing regions:*

(1) Coastal and offshore waters of Japan Proper.

(*a*) Cold waters surrounding Hokkaido and Kuril Islands,

(*b*) Temperate waters off coasts of Honshu, Kyushu, and Shikoku;

(*c*) Sub-tropical area south of Japan;

(*d*) Deep-sea: Pacific Ocean east of Japan.

(2) Former overseas fishing regions.

(*a*) In addition to fishing in waters near the Home Islands and former colonies (including the mandated islands), Japan operated salmon and crab fisheries

in northern waters of the Okhotask and Bering seas, trawling in the East China and Yellow seas, whaling in Antarctic waters, and small-scale fisheries off the coasts of Alaska, British Columbia, Mexico, Central America, and South America of the Western Hemisphere, and in Indian and Australian waters of the Far East.

D. *Ports :*

(1) The fisheries of Japan are conducted from many small and a few large ports scattered along the coasts of the Home Islands. Some important ports which serve as bases for large-scale operations are Hakodate, Choshi, Shimonoseki Tobata, and Nagasaki.

E. *Marine products* ·

(1) Japan produces a great variety of marine products for food. Several hundred different species of fish alone are eaten in Japan. Among the important edible products are :

(*a*) Sardines ;
(*b*) Herring ,
(*c*) Cod and flounder ;
(*d*) Cuttlefish ;
(*e*) Bonito and tuna ;
(*f*) Mackerel ;
(*g*) Salmon ;
(*h*) Sea bream ;
(*i*) Yellowtail ;
(*j*) Shellfish ;
(*k*) Seaweed ;
(*l*) Whale products

F. *Aquiculture :*

(1) The practice of aquiculture (culture of fish, shellfish, and seaweed) is highly developed and illustrative of the importance attached to fisheries by the Japanese Species raised include carp, eel, oyster, clam, and seaweed as well as trout and other fresh water fish The output from this production contributes considerably to the food supply.

G. *Research and education :*

(1) In keeping with the importance of marine products in the economy of Japan, much emphasis is placed on fishery research and education. Japan has 143 research stations, 32 prefectural schools, 2 colleges and 3 departments in its Imperial universities which deal with fisheries.

III.—FORESTRY.

A. *Importance of forests :*

(1) Japan depends on her forests to furnish lumber and timbers provide pulpwood and veneer logs, produce fuel, regulate stream flow, maintain water tables, prevent serious floods, minimise soil erosion, and supply food and other products.

B. *Principal forest types and species :*

	Type.	*Species*
(1)	Coniferous :	Cedar, cypress, fir, hemlock, largh, spruce, pines (red, black, white).
(2)	Broad-leaved :	Oak, beech, maple, ash, chestnut, cheery, birch, elm, aspen, camphor, paulownia.
(3)	Mixed :	Various mixtures of above species
(4)	Bamboo :	Numerous : 153 species recognised
(5)	Wasteland .	Called "genya"; treeless or with scattered trees

C. *Forest areas :*

COMPARATIVE FOREST AREA

(Unit 1,000 acres).

Total Land Area		Forest Land and Genya.		Commercial Forest.	
Area.	Per cent.	Area.	Per cent	Area.	Per cent
92,218	100	58,294	62	49,763	53

Note.—Area of productive forest per capita . 0 67 acres

FOREST AREAS BY OWNERSHIP

(Unit 1,000 acres).

	Imperial	National	Community owned.	Private.	Totals
Commercial forests	2,757	15,524	8,780	22,702	49,763
Special purpose forests[1]	220	1,763	411	682	3,076
Wasteland	247	1,341	1,460	2,407	5,455
TOTALS	3,224	18,628	10,651	25,791	58,294
COMMERCIAL FOREST COMPOSITION					
Coniferous	698	3,661	2,639	7,566	(14,564)
Planted	(322)	(1,450)	(1 691)	(5,002)	
Natural	(376)	(2,211)	(948)	(2,564)	
Broad-leaved	949	7,616	3,681	9,249	(21,495)
Planted	(2)	(243)	(387)	(1,162)	
Natural	(947)	(7,373)	(3,294)	(8,087)	
Mixed	1,053	3,300	2,157	4,640	(11,150)
Planted	(5)	(423)	(203)	(203)	(651)
Natural	(1,048)	(2,877)	(1,954)	(3,989)	
Bamboo	0	2	23	334	(359)
Denuded	57	945	290	903	(2,195)
SUB-TOTALS	2,757	15,524	8,780	22,702	(49,763)

[1] Special purpose forests are managed under special laws or regulations for their scenic beauty or for their usefulness in various ways such as protection against soil erosion, floods, winds or tides, head waters control, preservation of water tables, or maintenance of stream flow

Note Total area planted including special purpose forests. 17,011,000 acres

Note Total area of natural forest 35,668,000 acres

D *Volume and growth data:*

GREEN TIMBER VOLUME

(Unit 1,000,000 cubic feet)

Total Volume		Softwoods		Hardwoods.	
Volume	Per cent	Volume	Per cent	Volume	Per cent
60,708	100	34,916	58	25,792	42

Note Volume of green timber per capita 815 cubic feet

VOLUME BY OWNERSHIP
(Unit 1,000,000 cubic feet).

	Imperial	National.	Community owned, Private, Other.	Total.
Coniferous	2,864	10,914	21,138	34,916
Old Japan	(1,639)	(5,604)	(20,164)	
Hokkaido	(1,225)	(5,310)	(974)	
Broad-leaved	3,337	15,225	7,230	25,792
Old Japan	(531)	(11,187)	(3,778)	
Hokkaido	(2,806)	(4,038)	(3,452)	
TOTALS	6,201	26,139	28,368	60,708

ESTIMATED AVERAGE ANNUAL GROWTH

Ownership	Forest Area (1,000 acres)	Increment (Cubic feet per acre per year).	Total Annual Growth (1,000 cubic feet)
Imperial	2,757	27	74,436
National	15,524	20	303,753
All Other	31,482	41	1,315,583
TOTAL	49,763	.	1,693,772

Note Average annual increment per acre per year . 34 cubic feet.
Note . Average growing stock per acre 1,220 cubic feet

E. *Reforestation :*

(1) Area planted (1946) . 525,000 acres.

(2) Seedlings are planted at the rate of 800 per acre Planting of nine billion seedlings is planned from 1947 to 1951.

F *Utilisation data :*

(1) Annual consumption of Wood.

AVERAGE ANNUAL PRODUCTION OF ALL WOOD PRODUCTS
(Unit 1,000,000 cubic feet solid volume)

Period	Lumber and Timber	Fuelwood	Total
1926-1930	474	1,226	1,700
1931-1935	563	1,316	1,879
1936-1940	906	1,600	2,506
1926-1940 average	648	1,380	2,028
1946	337	556	893

COMPARATIVE AVERAGE ANNUAL CUT AND GROWTH 1937-1943.

(Unit 1,000,000 cubic feet solid volume).

Lumber[1]	Fuelwood.	Total Cut.	Growth.	Cut . Growth.
1,069	2,331	3,400	1,694	2 · 1

[1] Lumber as used here includes round timbers, sawed boards and timbers, pulpwood and veneer

Note Average annual consumption of solid wood per capita (1946) 30 cubic feet.

Note Average annual growth of green timber per capita (1946) 22 cubic feet.

(2) All wood products (except fuelwood) : Current requirements and production :

(*a*) The economy of Japan depends heavily on wood, despite the recent industrial progress Ninety-nine per cent of the population lives in wooden houses · in cities like Tokyo, only one per cent of the 1,100,000 pre-war buildings was constructed of materials other than wood. In industry, rayon manufacture depends entirely on wood pulp for fibre Fishing fleets are composed mainly of wooden ships

DEMAND, ALLOCATION, AND PRODUCTION OF WOOD PRODUCTS, 1946.

(Unit 1,000 cubic feet).

	Estimated Demand.	Allocation	Production
Mine timbers	82,780	81,000	68,330
Poles	16,110	11,150	1,540
Railroad ties	54,540	26,490	11,100
Veneer (for plywood)	17,950	17,950	9,660
Pulpwood	119,400	64,480	31,700
Lumber	597,500	423,410	214,210
TOTALS	888,280	624,480	336,540

DEMAND, ALLOCATION, AND PRODUCTION OF WOOD PRODUCTS, 1946

(Unit 1,000 cubic feet)

Lumber Usage.	Estimated Demand	Allocation.	Production.
Housing	289,000	214,000	Satisfactory data not available.
(Govt use)		(94,000)	
Public works	150,000	80,000	
Casks	5,350	5,000	
Agric equipment	4,900	7,380	
Matches	3,750	4,520	
Wooden ships	16,600	15,000	
Fishing ships	16,700	15,200	
Steel ships	3,680	3,700	
Railroad cars	7,340	4,400	
Automobiles	3,680	2,800	
Miscellaneous [1]	96,500	71,410	
TOTAL	597,500	423,410	

[1] Included in "Miscellaneous" are such items as boxes, wooden clogs, furniture, hardwood goods, handles, sporting goods, pencils, barrels and others

(*b*) Occupation Forces: Requirements for troop and dependency housing: 500 million board feet (This requirement, which represents about eight per cent of lumber and special timber production, was virtually completed by 1st January 1947. Additional requirements are expected to be small).

(*c*) Japanese housing.

Houses destroyed or torn down during war	3,000,000
Houses required for repatriates	800,000
Houses annually depreciated or war-delayed construction	400,000
Total requirements	4,200,000
Total pre-war houses	16,000,000

Estimates of construction requirements are calculated 15 tsubo (534 square feet) per house, requiring about 4,800 board feet. From 2nd September 1945 to 1st January 1947, 300,000 houses requiring 1,500,000,000 board feet are reported to have been constructed (*Note:* Many emergency structures requiring 2,400 board feet or less have been built However, many other buildings, such as theatres, dance halls,

restaurants, or shops requiring much more lumber per structure have been built with blackmarket lumber).

(*d*) Sawmills (as of 30th November 1946):

Total reported	18,820
Total in operation	16,042
Rated horsepower in operation ..	310,000
Annual milling capacity (at 50 bd. ft. per H.P. per day)	3,750,000,000
Employees	170,000

Lack of repairs, replacements, lubricants, and sometimes electric power are the principal causes for non-operation.

(*e*) Plywood Requirements and Production (4 mm thick)

Pre-war production (1935-41): 470,000,000 square feet annually.

Occupation Forces' Requirements: 35,000,000 square feet total.

Production—1946: 128,000,000 square feet.

One-fourth of Japan's 235 veneer and plywood plants were damaged or destroyed during the war. Shortage of materials holds the industry to about one-half rated capacity.

(*f*) Pulpwood:

1. Wood pulp mills in Japan consume much less wood than other wood-using industries such as lumber and charcoal. From a total annual growth per year of 1,693,000,000 cubic feet, only a little over 30,000,000 cubic feet were consumed in 1946 by the wood pulp industry. However, the volume of wood consumed annually for a seven-year period up to 1944 was approximately 120,000,000 cubic feet; consequently a substantial increase in the use of pulpwood is essential for the future cultural expansion in Japan. The preferred species are the spruce and fir (yezomatsu and todomatsu) which grow abundantly in Hokkaido, and the red and black pines (akamatsu and kuromatsu) of Old Japan. Other species used for pulping include beech and hemlock.

2. A substantial increase in the rayon industry is essential and the production of kraft pulp, both unbleached and bleached, will become a necessity if Japan is to have strong papers of relatively high quality.

3. The following table shows the 1946 production of the various types of pulp produced and the cubic feet of pulpwood consumed:

PRODUCTION AND CONSUMPTION OF PULPWOOD

Type of pulp	1946 Production in short tons	Conversion Factor short tons to cu. ft. solid wood	Cubic Feet. Solid Pulpwood.
Groundwood	138,477	100	13,847,700
Sulfite	69,212	200	13,842,400
Kraft	6,466	165	1,066,890
Rayon	11,632	220	2,559,040
Soda	1,012	190	192 280
TOTAL	225,799	.	31,508,310

(*g*) Bamboo:

1946 PRODUCTION

Moso species .. .. 2,255,000 pieces

All other species . .. 4,437,000 bundles.

Note Moso species of bamboo is marketed by the piece, while all other species of bamboo are sold in bundles A bundle consists of a number of stems forming a unit 20 to 25 inches in circumference, measured 4½ feet above the severed end

(3) Fuelwood

FUELWOOD PRODUCTION 1946

(Unit 1,000 cu ft solid wood)

	Firewood	Wood for Charcoal[1]	Total
Demand	473,000	606,000	1,079,000
Production	214,000	342,000	556,000
	45·2	56·5	51 6

[1] The figures given are for solid wood for conversion to charcoal Solid wood converts to charcoal at the rate of 260 cubic feet of solid wood for one metric ton of charcoal Annual charcoal requirements are slightly more than two million metric tons

Note Ratio of fuelwood production to production of all other wood products is 1 7 to 1 or 6 2 5 per cent of total wood production

MINOR BY-PRODUCTS COLLECTED ANNUALLY

Edible mushrooms	10,000 metric tons.
Edible bamboo shoots	20,000—30,000 metric tons.
Edible nuts	5,000—10,000 metric tons.
Cork bark	10,000 metric tons
Bark of cedar and cypress	7,500,000—8,500,000 sq. ft.

Wax, lacquer, resin and wood tar are also collected.

G. *Forest Research:*

(1) Forest research covers a wide range of activities, including utilisation, protection, soils, silviculture, technology, management, meteorology, and by-products. Japanese research workers are fully conscious of the desirability of improving forest areas and utilisation of the products. Some projects do not give the impression of having immediate practical value until it is realised that there are shortages of many commodities in Japan, necessitating development of substitutes.

(2) Forest experiment stations have been established to conduct programmes under the supervision of the Imperial Household, national and prefectural governments and universities Forest product experiments are pursued by private industrial laboratories seeking better utilisation practices in their manufacturing processes

(3) Forest experiment stations are located at:

(*a*) Imperial Forest and Estates Bureau, Tokyo and Hokkaido;

(*b*) Bureau of Forestry, Ministry of Agriculture and Forestry, Tokyo;

(*c*) Prefectures: Fukuoka, Hokkaido, Hyogo, Kagoshima, Shimane, Toyama, Wakayama and Yamanashi,

(*d*) Imperial Universities. Hokkaido, Kyoto, Kyushu and Tokyo;

(*e*) Industry: Several major wood using manufacturers have established private wood products experiment laboratories

IV.—MINERALS.

A. *Japan Poor in Mineral Resources*

(1) In all except a few commodities the resources and production are inadequate for her own needs. Japan did, however, build a large refining and processing industry, which, although dependent on imports of raw materials, yielded finished products for her own use and for export

B. *Inadequate Mineral Resources :*

(1) Petroleum.

(*a*) Three major producing areas—Akita, Yamagata; and Niigata districts in north-western Honshu,

(*b*) Present production about 1,400,000 barrels from about 4,000 producing wells. This production is about 10 per cent of civilian requirements in 1935.

(2) Lead, manganese, tungsten, molybdenum, fluorite, nickel, cobalt, antimony, mercury, vanadium, titanium, iron, asbestos, graphite, gypsum, tin and other minerals are produced in insufficient quantities. No phosphate, potash, or rock salt. Pan salt is produced in sufficient quantity to provide for about 50 per cent of Japanese needs. Lack of phosphate and potash is particularly critical in view of the large quantities required for production of fertilisers.

C. *Adequate resources :*

(1) Copper · Production has exceeded 70,000 metric tons of refined copper per annum from 1935 to 1944, inclusive. Eighty per cent of production from mines in Honshu.

(2) Zinc · Production of refined zinc has exceeded 22,000 tons each year since 1935. Ninety per cent of production from Honshu.

(3) Gold · Recent production of gold has been about 3·8 tons per year. The production has come from many widely scattered mines.

(4) Silver : Production has exceeded 200,000 kg. since 1935. Japan was seventh in world production.

(5) Arsenic : Since 1935 production has exceeded 2,000 tons per year which is approximately enough for insecticides and other normal needs.

(6) Chromite : Since 1935 production has exceeded 33,000 metric tons annually Nearly all production has come from southern Hokkaido and southern Honshu.

D. *Resources in excess of needs :*

(1) Coal : The Japanese coal reserves have been estimated at 16,000,000,000 metric tons, of which 93 per cent is bituminous, 4 per cent semi-anthracite, and 3 per cent lignite ; peak production of 57,000,000 metric tons in 1940 was achieved under government subsidy and is not an index of peace-time producing capacity The principal coal fields are :

(a) Northern Kyushu fields produce over one-half total output,

(b) Hokkaido fields, chiefly Ishikari;

(c) Honshu fields, chiefly Joban and Yamaguchi fields.

(2) Sulfur and pyrite Sulfuric acid production is estimated to have reached a maximum of 3,800,000 tons in 1943

(3) Cement During the war Japan produced more than 4,000,000 metric tons per year.

(4) Water resources. The Japanese have large resources of water and have utilised their surface water to a high degree.

(a) Streams are short, with high gradients; because of large rainfall, they carry a large volume of water.

1. Electric power potential for Japan is estimated at 10,000,000 kw.

2. Largest hydro-electric plant is on the Shinano river at Tomaru-mura, Niigata Prefecture—165,000 kw.

3 Many small-scale irrigation projects.

E. *Plant Capacity for Smelting and Reduction in Excess of Needs.*

(1) Steel 5,887,000 metric tons maximum production in 1943. To achieve sufficient production, imports of high-grade iron ore or pig iron were necessary.

(2) Ferro-alloys: Capacity proportionate to steel capacity.

(3) Sulfuric acid· 3,800,000 metric tons maximum production in 1943.

(4) Magnesium 2,903 metric tons maximum production in 1944.

(5) Aluminium 114,057 metric tons maximum production in 1943.

(6) Superphosphate 1,639,000 metric tons maximum production in 1939.

(7) Copper refining: 122,000 metric tons maximum production in 1943.

F. *Research and Education.*

(1) Research in mining and geology is on a small scale compared to similar research in the United States. The relatively low potential of scientific personnel made it necessary for the capable Japanese scientist to divide

his efforts between numerous assignments. The Imperial universities, where most Japanese scientists receive their training, are inferior to the average American state university in both faculty and equipment. Research lacks continuity between the academic and applicatory phases.

(2) Scientific research in Japan is largely under the control of the Japanese government through agencies within the Ministry of Education and government ownership.

(3) Important research institutions are the Imperial Geological Survey, the Imperial Universities of Tokyo, Hokkaido, Tohoku, Kyoto, and Kyushu, and laboratories of the Mitsubishi Mining Company, Ltd. Researches in sciences related to mining and geology are made at the Yawata Technical Research Institute and other metallurgical laboratories maintained by the Japan Iron and Steel Company, Ltd , the Japan Steel Works, and the Kobe Steel Works, the Institute of Physical and Chemical Research, the Chemical Industrial Research Laboratory, and the Imperial universities

MYTH EXPLODED BY JAPAN

The post-war industrial economy of Japan is relying more and more on the expansion of home industries and maximum utilisation of home-grown raw materials. However, Japan has falsified the orthodox theory, still holding our brains, that a country can only manufacture articles from locally available raw materials Cotton, tin, rubber, steel and a hundred and one important raw materials are all imported. Japan's world famous textile industry, knitted goods (export value 50 million yen, *i.e.*, 3 million sterling—four crore rupees), shell buttons, brushes (of a hundred varieties), lacquerware, rubber goods and guts are exclusively dependent on imported materials. Japan's fishing industry, which was (before the war) responsible for world's 40 per cent catch, depends on supply of fishing nets made from imported raw materials, especially rammie (which makes strongest rope). Many home industries depend on imported chemicals. Japan is self-sufficient in bambooware (1,400 articles are made—90 *per cent home industry*), Japanese paper and processed goods (300 articles are made from paper—beautiful umbrellas, lanterns, fans, bags, ropes, napkins, even cloth, table furnishings, suit cases, etc), silk goods, toys of wood, porcelain and paper and celluloid goods (combs and toys sold all over the world) But even in these industries, imported goods are used as secondary raw materials. Take for example celluloid. The main raw materials are cotton rags, nitric acid and

camphor. Cotton rags are imported from abroad and although Japan was self-sufficient in camphor before the war, she may have to import camphor from Formosa (her former colony) if she wants to expand her celluloid industry. In ceramics also some of the glazing materials must be imported from China. Some of the finest ceramics in Japan are the products of home industries and not of large factories. These " home factories " produced complete dining sets of forty pieces for rupees twelve only !

(Read all about the miracles of Japanese home industries in chapter V).

CHAPTER IV

ALMIGHTY POWER

MIRACLES OF POWER

WORLD'S FIFTH LARGEST

ELECTRIFICATION OF INDUSTRIES

HYDRO-ELECTRIC POWER

90 PER CENT BUILDINGS WITH ELECTRICITY

39 BILLION Kw.

TOTAL POWER PRODUCED

74 PER CENT FROM WATER

FUTURE REQUIREMENTS

WONDERS OF ELECTRICITY

RURAL PARADISE

NEW DIVISION SCHEME

DECONCENTRATION LAW

JAPANESE CRITICISM

CRISIS IN INDUSTRY

OUTLOOK FOR THE FUTURE

CHAPTER IV

ALMIGHTY POWER

Japan is the fifth largest electric power producing country in the world.

* * * *

Rural electrification in Japan is more complete than in any other large nation. Approximately 90 per cent of all buildings in Japan are lighted by electricity.

POWER is the weapon of the kings and electric power is truly the greatest modern weapon for industrial superiority. But for the U.S.A.'s unique power plants she would not have been able to beat the whole world in production. Japan realised the miracles of power several decades ago and launched a most effective plan of electrification with the result that 90 per cent of her homes and cottages have electricity Every home-factory depends on electricity. The following table speaks for the volume of electrification in Japanese industries.

ELECTRIFICATION OF INDUSTRIES

	Total power equipment (1,000 H P)		Percentage of electric motors of total horse power.	
	1909	1933	1909	1933
1 Textiles	127	931	9·8	80 8
2 Metals	16	898	37 2	77·9
3 Machines and tools	26	494	33 8	90 4
4 Ceramic industries	19	364	20·3	72·2
5. Chemical industries	44	824	9 2	87 7
6. Timbering and woodworking	17	165	5·9	68 2
7 Printing and book-binding	3	36	39·1	98 6
8. Foods and beverages	24	225	9·0	82·3
9 Other Industries	5	82	4 7	95 9
TOTAL	281	4,019	13·3	82 0

The figures in the above table illustrate how rapidly electrification was carried out in the manufacturing and mining industries in recent years. Electric motors which in 1909 accounted for only 13 per cent of the total power produced, approximated 59 per cent at the end of 1919 and 82 at the end of 1933.

Seventeen companies, acting in the capacity of joint generating and distributing companies or generating for railroad use, control six per cent of the hydro-electric capacity.

The five per cent of hydro-electric power capacity used for private comsumption is owned by 18 companies The greatest part of this power is used in some branch of the chemical industry

OWNERSHIP OF ELECTRIC GENERATING CAPACITY[1]

(Excluding plants under 1,000 kw)

	Hydro Capacity Kw	%	Steam Capacity Kw	%
1. Public Utility Plants	5,601,311	95	3,029,980	74
a Nippon Hassoden Co	4,478,732	76	2,815,200	69
b. Nine distributing Companies	761,709	13	98,980	2
1. Hokkaido Power Supply Co	39,253		12,780	
2. Tohoku Power Supply Co	154,914		7,500	
3. Kanto Power Supply Co. ..	123,005		10,000	
4 Chubu Power Supply Co. ..	96,948		6,000	
5. Hokuriku Power Supply Co.	85,714		.	
6. Kansai Power Supply Co. ..	49,321		7,500	
7. Chugoku Power Supply Co.	58,930		14,250	
8. Shikoku Power Supply Co	30,280		5,450	
9. Kyushu Electric Power Supply Co.	123,344		35,500	
c. All Others	360,870	6	115,800	3
2. Private Plants	261,504	5	1,046,390	26
3. TOTAL	5,862,815	100	4,076,370	100
GRAND TOTAL ..	..		9,939,185	Kw

PRODUCTION

A. *General.*

1. Except for certain hydro-electric plants that can be overloaded with some loss of efficiency, the maximum production rate of hydro-electric plants is the total of the licensed capacity of the individual plants, which has been shown to be about 6.1 million kw. In the case of steam plants, the maximum production rate is theoretically the installed capacity. However, actual power production depends on other factors.

[1] Japanese Trade and Industry (Published by Mitsubishi Economic Research Bureau, now dissolved by the SCAP authorities)

(*a*) Power production from hydro-electric plants depends primarily on the availability of sufficient water to operate the plants efficiently. Since individual plants have capacities utilising various flow durations, seasonal variations in stream flow produce corresponding variations in effective generating capacities. In general, plants built prior to 1920 had capacities limited to 355 or 275 days' duration of flow, from 1920 to 1935, 185 days' duration, and since 1935, 95 days' duration.

(*b*) Power production from steam plants depends on the general efficiency of the plant and on the quality of the coal used In Japan, largely because of inferior coal and inefficient ash-handling equipment, the best power production from the entire steam plant system has been about 75 per cent of the total installed capacity.

2 Current practice in Japan is to carry as much base load as possible by use of hydro-electric plants and to supplement water power with steam power when available water does not permit water power to carry the full load, or when unusual loads develop. In certain areas where water power facilities are inadequate, part of the base load is also carried by steam power. To determine the effectiveness of hydro-electric plants on a yearly basis and during the dry season, and to obtain an understanding of the important relation between water and steam power, it is necessary to examine and analyse statistics of power production over a period of years

B *Total Power Produced.*

1. Percentages giving the relation of hydro-electric power to total power produced indicate that total annual production increased from about 16 billion Kw in 1930 to a peak of nearly 39 billion Kw in 1943 and that water power furnished from 69 per cent to 86 per cent of the total

Normal conditions are assumed to have existed during most of the ten-year period 1933-1942. The years 1930-1932 were depression years and power loads were not sufficient to require normal steam generation The years 1943 and 1944 were also abnormal because of war demands The median figure for the ten-year period indicates that under normal conditions hydro-electric power accounts for 80 per cent of public utility power, 18 per cent of private power, and 74 per cent of all power generated

Future Requirements.

1. Determination of future requirements for electric power in Japan is beyond the scope of this report. However, in order to estimate the adequacy of present installations for meeting present and future requirements, certain salient facts should be mentioned.

(*a*) Prior to and during the war all important industrial prime movers were powered by electricity. Regardless of the changes in Japan's industrial structure that may take place during and after the readjustment period, proportional use of electricity for industry will continue.

(*b*) Rural electrification in Japan is more complete than in any other large nation. Approximately 90 per cent of all buildings in Japan are lighted by electricity, but the average home contains only one or two lights and electricity is not used for other purposes. Such limited domestic use in the past was due probably to lack of purchasing power in the average family. Increased family income is likely to lead to greater domestic utilisation of electricity and such increase is probable if objectives of the occupation are accomplished.

2. During the years 1936, 1937, and 1938 Japan had fully recovered from the effects of the economic depression, but no great amount of electric power was being used in armament production or in war industries. Average power production from all sources during that period was approximately 31 billion kw annually. Based on present population this is *per capita* consumption of about 35 Kw per month and is equal to *per capita* use in the United States in the year 1923. It seems reasonable to assume therefore that an annual load of at least 31 billion Kw is or will soon be necessary.

WONDERS OF ELECTRICITY.

Electrification Pays. [1]

An instance of how electrification can pay heavy dividends to villagers is reported from Nakasu Village in Suwa County, Nagano Prefecture. It offers a striking example of increased production which mechanised farming makes possible.

The village is about 30 minutes by bus south of Kami Suwa, famous for its lake and hot springs, and is surrounded by mountains It has a population of 3,336 (74 per cent of it agrarian) and 450 households (157 of them non-agrarian). The area under cultivation consists of 220 8 ' cho ' of irrigated fields and no more than 36 ' cho ' of dry fields—1 'cho ' (about 2.45 acres).

One household operates an average of 0.49 ' cho ' of farm, about half of the average elsewhere in Japan (except in Hokkaido) of 0.85 ' cho ' But the yield per unit of land is no less than 3 1 ' koku ' of rice per year, as against the average yield elsewhere of 2 1 ' koku ' (1 koku—about five bushels) Land reform has banished big landlords and tenant-farmers alike and made practically every one in the village a yeoman.

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[1] Nippon Times, Tokyo.

DIRECT INCENTIVE.

The direct incentives to mechanisation of farming were:

1. The difficulty of keeping service animals for want of fodder. The village is suited only for rice cultivation and so produces little or no fodder for cattle

2. The necessity of using underground water, rich in ammonia, to cover the shortage of fertilisers Speed was required in drawing water within the time available and this necessitated the installation of suction-pumps.

Mention must be made of the fact that the villagers readily realised the advantages that would accrue from mechanised farming and adopted it without hesitation. The village leaders are still busy striving for further electrification of the village

As of January 1 this year, the village was equipped with 87 motors, 28 suction-pumps, five tractors, 44 husking machines, 14 rope-making machines and one motor-operated insecticide sprayer.

About 40 per cent of this equipment is owned privately and the rest by the community.

RESULTS SURPRISING.

The suction-pump has displaced the wind-mill. The installation of rope-making machines has made it possible for the village to deliver 50,000 'kan' of rice-straw, as against the delivery quota assigned to it of 16,000 'kan'—to the surprise of the authorities. The installation of husking machines has enabled early shipment of the rice crop. The necessity of employing some 200 extra farm hands in the busy season has been done away with These are some of the effects which mechanised farming has produced in this village.

The village plans to purchase during this year a further 138 motors, 5 thrashing machines, 35 husking machines, 20 pumps and 100 rope-making machines. Conditions permitting, the village hopes to use electricity in sericulture and for accelerating the growth of rice plants, and also to electrify the homes.

"Complete electrification of the village is at present difficult, owing to the heavy burdens of delivery quota and taxation," one of the village leaders said.

NEW DIVISION SCHEME.

War and occupation by the Allied Powers and SCAP's new decentralisation scheme have adversely affected Japan's power potential and the scheme has been seriously criticised by the Japanese press. I have seen many a home-factory stopping work or slowing down production due to lack of electricity.

DISASTROUS RESULTS PREDICTED.

Some are hopeful but most experts are criticising the new scheme. Mr. Takema Miyagawa, a distinguished industrial writer says :—

" The dismemberment of the Japan Electricity Generation and Transmission Company would make co-relation and interdependence between the resultant separate units impossible, when such co-relation and interdependence are absolutely necessary under the topographical conditions of this country. Not only that, but there would be vast differences in the cost of electricity according to regions, to the detriment of the majority of the people. The partitioning of the Japan Electricity and Transmission Company, I dare say, would spell natural misfortune

Whether generation and transmission are nationalised or privately undertaken, the final stage of distribution had better be socialised. The wholesale price of electricity should be classified into about five different scales according to the volume of the demand in each prefecture (Special rates should be fixed for supply to the chemical industry, etc) In this way, a standard rate of profit for each prefecture can be fixed, leaving them to make more profit by their own respective ingenuity and effort. The price should be fixed on a fair basis by the Public Utilities Commission."

CRISIS IN ELECTRIC INDUSTRY

Though pre-war Japan was a paradise owing to an abundance of cheap power, the war has shattered that paradise and now there is shortage of power, 33 per cent less than the demand. Speaking on the crisis in electric industry Mr. Mizutani, Minister of Commerce and Industry, recently stated that Japan's present official power generating capacity "totals 6 million Kw (5 million Kw hydro-electric and 1 million thermal generation) against a combined generation potential of 9 million Kw (6 million Kw hydro-electric and 3 million thermal). The Minister added that " due to the unprecedented drought and heavy damages caused to power stations by the recent floods, as well as the worsening coal shortage, actual generating capacity has fallen to 2 9 million Kw (2 5 million Kw hydro-electric and 4 million Kw thermal), or about 60 per cent of the actual power demand, which totals 4 5 million-5 million Kw."

Referring to the effects of power shortage on industrial production, Mizutani reported that " the November output of steel materials dropped below 30,000 metric tons against the goal of 48,000 tons, ammonium sulphate to 55,000 metric tons against a goal of 61,000 tons, and rayon to 1 5 million pounds against the 2 million pounds goal " He predicted an equally gloomy effect in the January-March quarter.

"The Minister's revelation, confessing the inevitable slowing down of the nation's production, certainly has a very discouraging effect on the daily life of the people," he continued. "At the gubernatorial conference on 27th November, the Government reiterated its determination to stamp out blackmarket operation in perishables and fuel. As one of the cardinal measures to be taken in this connection, the Administration clarified its policy of bolstering up the link system, offering fertiliser in exchange for quota deliveries of vegetables.

"With the production of major fertilisers dwindling due to power shortage, this policy is certain to come to the breaking point. Consequently, deliveries of vegetables will be disrupted, and the daily life of the people will inevitably be threatened Effects of dwindling production due to power shortage are far more tragic than is generally known The Government is urged to resort to all and every possible means to increase power supply before the situation assumes more serious proportions."

Outlook for the Future.

Let me end with an optimistic note —

"Though electric power enterprises have been thrown into confusion owing to war-time controls, war damage, and post-war controls," Ichizo Kobayashi, writes in TOYO KEIZAI SHIMPO, "potential power sources awaiting development give room for an optimistic view of the future, if no serious mistake is committed in the methods adopted for rehabilitation....With the completion of repairs on existing plants, overall capacity should be sufficient to meet the demand for three or four years to come....Regional operation, taking into account the actual conditions obtaining in the various localities of Japan, would seem most advantageous in this connection."[1]

I am sure the democratic government of Japan will restore the cheap electricity that is Japan's great weapon for successful industrial economy.

[1] Oriental Economist.

CHAPTER V

HOME IS MY FACTORY

HOMES ARE WORKSHOPS

FROM AGRICULTURE TO INDUSTRIES

FAMILY CO-OPERATIVES

LOVE FOR LABOUR

CHILDREN'S CONTRIBUTION

DIVISION OF LABOUR

TRAINING IN VILLAGE SCHOOLS

INDUSTRIAL EDUCATION

FORTY THOUSAND GRADUATES ANNUALLY

THREE THOUSAND TEACH INDUSTRIES

WONDERFUL INDUSTRIAL GENIUS

ART ACADEMY

INEXPENSIVE HOME-MADE MACHINES

COME TO THE VILLAGES

STORY OF SIX VILLAGES

WHOLE VILLAGE A HUGE FACTORY

HAS THOUSAND HOME FACTORIES

IRON SMITHS ALL

'INDIA MADE US MILLIONAIRES'

MILLIONS FROM CASTIRON

WORKERS SHARE PROFITS

3,500 PAPER MAKERS IN ONE VILLAGE

PAPER, PAPER EVERYWHERE

GOVERNMENT TRAINS VILLAGERS

THREE HUNDRED ARTICLES FROM PAPER

BAMBOO VILLAGE FACTORIES

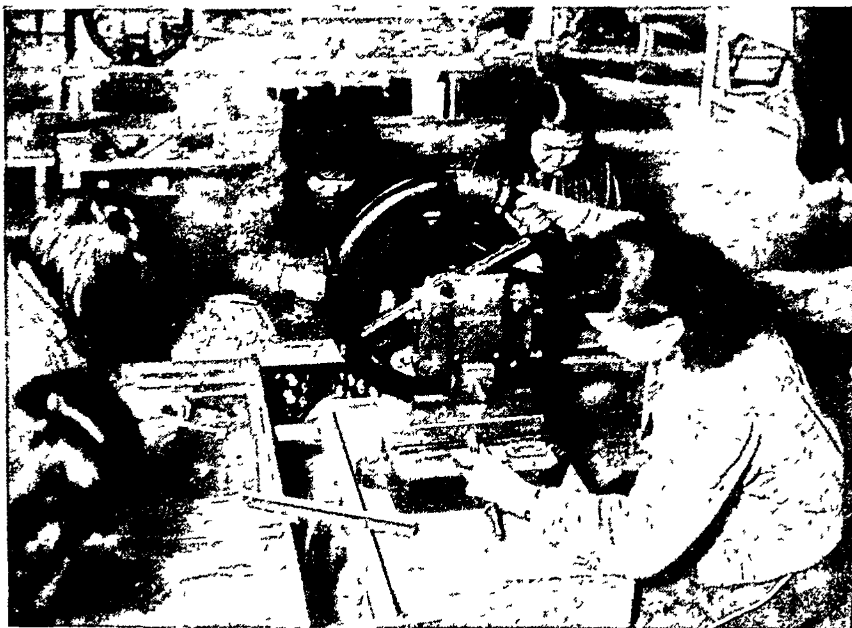
DESTINATION AMERICA

MATCH MAKING HOMES

HOME-MADE CLOTH

WOMEN—SOUL OF INDUSTRY

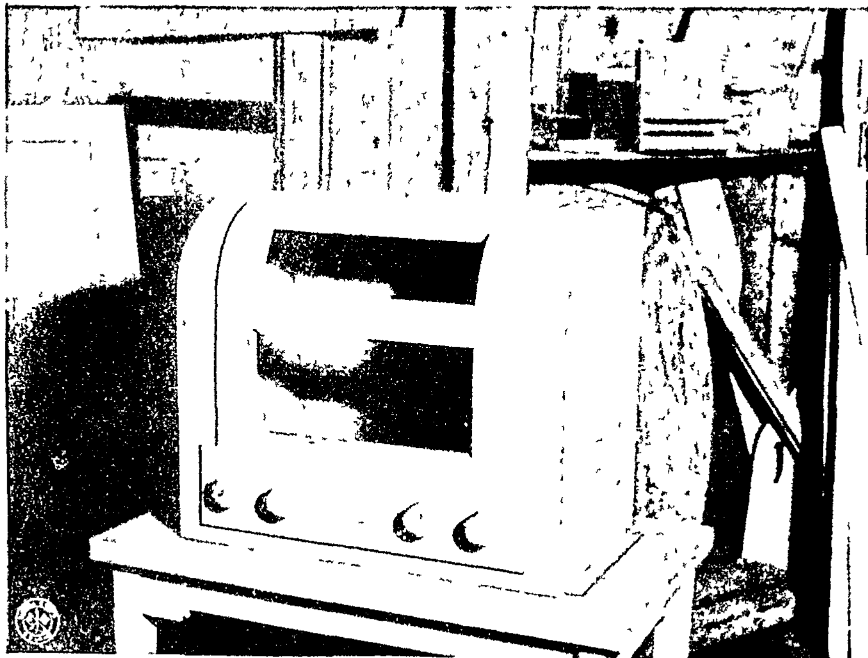
MACHINES TO VILLAGES



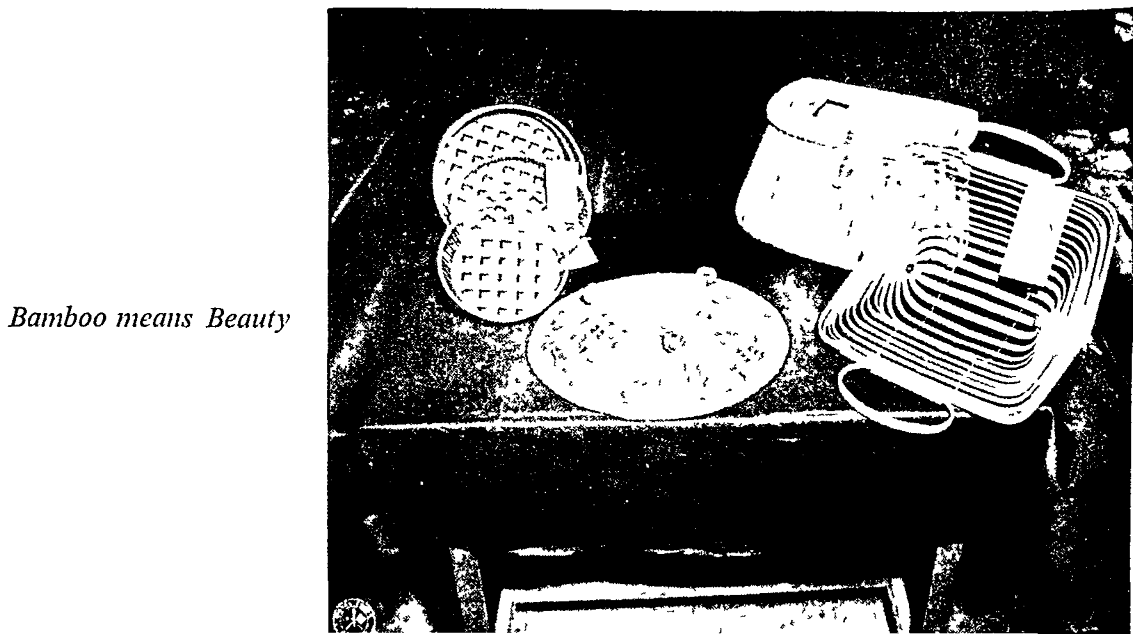
Zip-Fastener Factory



Bedroom—Home Factory

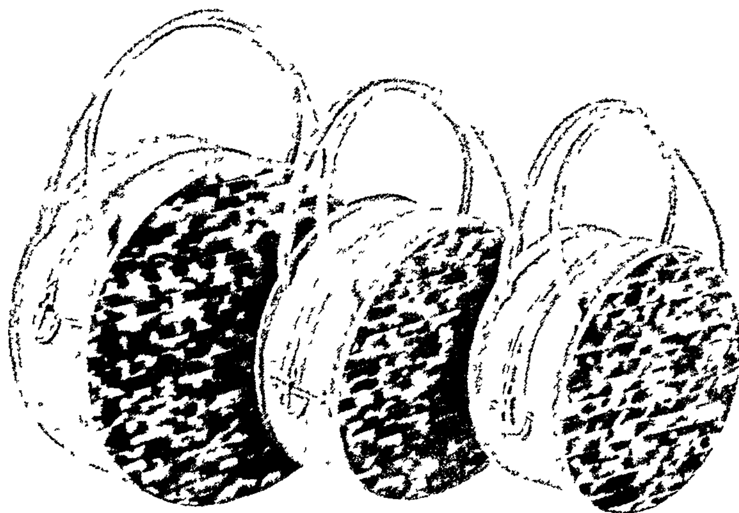


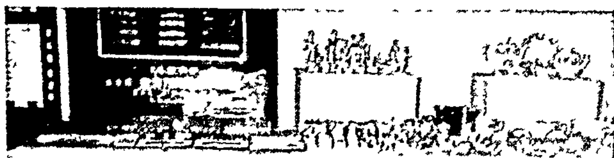
Miracles of Bamboo

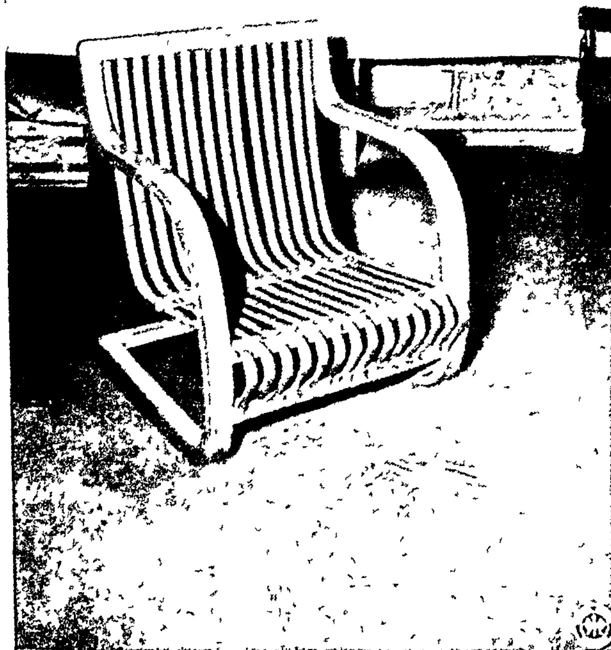


Bamboo means Beauty

A Purse for every Lady



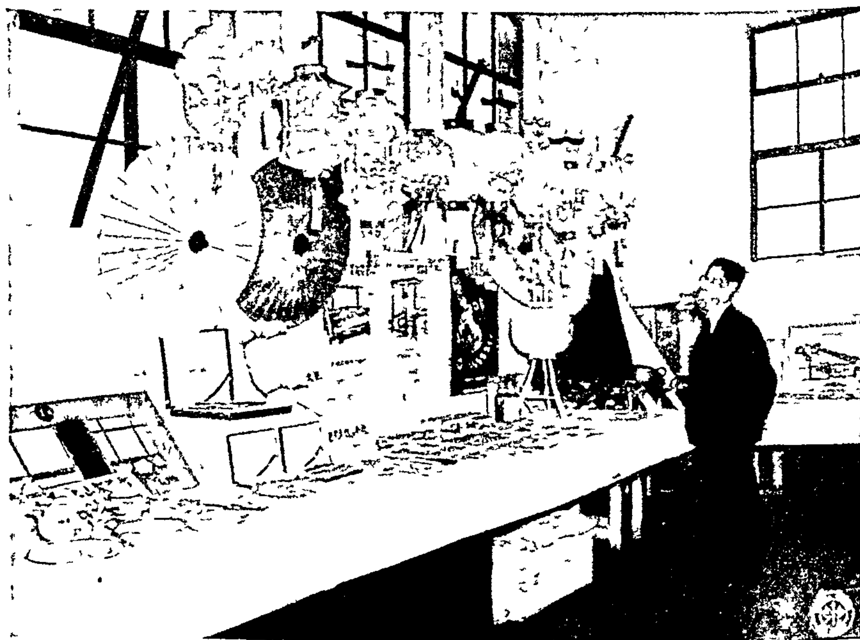




Easy Chairs from Bamboo



Baskets for Flowers in every Home



300 *articles from Paper*

CHAPTER V

HOME IS MY FACTORY

The whole of Japan is a home of factories

*　　　*　　　*　　　*

Three years ago war had reduced my factory to a pile of ashes. Today with three workers (myself, wife and an old worker) in my one room home-factory I have saved one million yen and am planning to establish a large factory —A small factory owner in an interview with the author.

*　　　*　　　*　　　*

Cottage industries mean wealth for the poor, wealth brings dignity—the end of untouchability and other social sufferings.

*　　　*　　　*　　　*

From bamboo alone the Japanese manufacture 1,400 *articles in their home factories which number* 14,000. *Bamboo chairs and bamboo-made radio sets are unique in artistic beauty. Bamboo for export finds expression in endless varieties of excellent Japanese handicraft Baskets, knives, forks, spoons, smoking sets, serviette rings, buckles, buttons, door handles, handbags, tiles, plywood, walking canes, fishing rods, knitting needles, toys, shoes, compacts, trays and pipes are among the myriads of products made of this versatile wood.*

*　　　*　　　*　　　*

A factory which forms the centre of the shoelace industry is situated in a farming village. In the centre of the industry is a small-scale plant equipped with electrically operated mechanical installations. Here cotton, silk or rayon yarn is braided into shoelace by mechanical power, but beyond this the shoelace thus braided goes through various phases of a household industry; shearing, metal fitting, packing, etc., all conducted as side jobs chiefly by the women and children in the neighbourhood.

I have spent three years in Japan and have closely watched her phenomenal industrial progress during the last 16 years. The chief secret of her industrial prosperity is that the whole of Japan is one large factory where every citizen is busy contributing his or her quota. Eighty years ago Japan was an agricultural nation To-day, despite the war, she is a leading industrial nation The secret lies in Japanese homes which are homes at night and factories during day. The home-factories of Japan have wrought a great miracle in the post-war rebirth of Japan's industrial economy.

LET FACTS SPEAK.

The British exploiters were never tired of telling the world that India is essentially an agricultural country and it could not be converted into an industrial nation. Emperor Meiji of Japan achieved in fifty years what the British could not and would not do in India in 200 years I have already explained in another chapter how the Emperor did it but here let me quote only the last decade's progress of home industries which has been fast converting Japan, an agricultural country, into an industrial country. The farmers who mainly depended on meagre agricultural incomes have been able to improve remarkably their living standard by devoting their spare time to home industries and small industries.

FARMERS WITH SUPPLEMENTARY JOBS.

The following data shows the progress of the scheme to provide supplementary jobs to farmers in the vicinity of their homes:

1937	25% had supplementary jobs.
1938	54 3% ,, ,, ,,
1941	58 1% ,, ,, ,,
1942	61 5% ,, (Peak industrial & war production year).
1946	46 4% ,, (After the war)
1947	52% ,, ,, ,, ,,

Many war workers have again become farmers after the war. The decrease in supplementary jobs is natural

FAMILY CO-OPERATIVES.

Japan's home industries can best be described as family co-operatives During my sixth visit to Japan I must have visited at least two hundred home factories and everywhere I found husband, wife, daughters, sons and some near relations working and chatting together. I found that work was a source of delight to them and not drudgery as most of our labourers feel and therefore work as long as the watching eyes of the overseer or munshi are fixed on them. Even the children of the ages of 8 and 10 lend a helping hand in home industries in their after-school hours. This does not mean that they do not play. The truth is that the Japanese are as picnic-minded as any

American and they occasionally go out to parks, beaches, mountains, hot springs, shrines, temples, and places of public amusements They do not wait for week-ends. To them every day after work is a holiday and in the evening one can find thousands of working men and women with their children, some tied on the backs of their mothers and elder sisters, some led by fathers moving on in endless rows in parks, shopping centres, amusement centres and temples. Children specially love visiting department stores which generally have a fishing pool, a roof garden and a temple on the eight-floor building The Japanese believe in the maxim "work while you work and play while you play." These children seriously contribute their quota of work in poor working families. Here is the story of a family co-operative through Western eyes[1] :—

A PENCIL COMBINE.

In a small wooden house in a side road in Tokyo, behind a latticed sliding door which serves as a window as well, a man, a woman and a young girl are seated on the clean, mat-covered floor. They bundle and label pencils, which are brought to them from a factory near their home The pencils are tied together in neat little packages of twelve with gay pictures on top. The family work with quick, automatic movements.

They work from early morning until late at night, and when the small children come home from school they spend eight hours, so the mother says, helping the older members of the family with the packing of pencils. Each child earns two annas for eight hours' work a day.

Forty families near the factory are employed in a similar manner. Before they get the pencils, many other families in Northern Japan, in Hokkaido, a district rich in wood and graphite, have worked under similar conditions making the unfinished pencils which are sent to the Tokyo factory in huge bundles.

The factory itself is merely a large handicraft plant laid out in thinly walled wooden workshops of somewhat improvised appearance. The machinery is more or less primitive. The forty men and women employed in this factory are mostly young and they earn between 15 and 30 yen a month (18s. and £1 16s). Only the finishing of the pencils is done here; they are painted, polished and name printed on them. In all, the factory sees to the planning of the work of about hundred small family enterprises, from the purchase of raw materials to the distribution of the finished pencils.

This combine produces 600,000 gross—86,400,000 pencils—a year. The cheaper ones are sold to the wholesale trade at prices ranging from 3 to 3 2 yen (.45 d.) a dozen. Pencils with India rubber at the top are sold at 6.6 yen (.96 d) a dozen. The best quality costs 25 yen (3½d)

[1] Made in Japan

a dozen. None is of poor quality. This one factory, employing a hundred families and forty factory workers, exports its pencils to forty countries.

This 'pencil combine,' and the cotton weaving home industry are typical of the first category of Japanese workshops, manufacturing in innumerable branches of industry for export and home consumption · small home enterprises, co-operating informally with the trade and with small-scale industries incorporated into larger units of production and distribution

DIVISON OF LABOUR

This is a unique co-operative system on which Japan's structure of small and home industries stands In Kyoto I was taken through a long bazar of fan makers where I witnessed the practical scheme of division of labour and co-operation. The bazar had several lanes, each branching out at a short distance Each lane had home factories exclusively attending to one aspect of fan-making. A fan is completed in six different homes. Each home performs its task with honesty and sincerity and the result of this co-operation is the world famous Japanese silkfan. (See picture). One home factory simply provides green bamboo pieces, the next cuts them into 8 inch handles, the third house colours and polishes handles, the fourth does the carving on wood, the fifth puts the printed silk and the sixth gives the finishing touch and provides the hook and folds every piece with care The wholesaler provides the boxes and arranges the sale of fans to all parts of the world.

VILLAGE TRAINING SCHOOL.

Japan is able to run her home industries on a scientific and well organised scale because of the availability of fully trained technicians in every industry and because of a clear grasp of the fundamentals of small and rural industries described in another chapter.

Our country must adopt the same system of concentrating an industry in villages where raw materials for the same are locally available. Much, however, depends on the industrial education system which enables thousands of workers being trained in their villages They do not need to live in crowded cities and be Westernised book-worms; instead they get practical training in village centres at a nominal cost and enjoy all the comforts of the home while they are trained Girls and boys study together, work together, play together, and come out as useful citizens of their country. (See story of Ogawa Hand Paper School).

INDUSTRIAL EDUCATION.

Industrial education is one of the main pillars of Japan's industrial structure. Industrial education is given at the universities, higher

schools of technology, polytechnic schools and industrial continuation schools Next to the United States of America and pre-war Germany, the universities of Japan provided excellent facilities for industrial education. To enter the industrial colleges it is necessary to pass six years in primary school, four years in middle school and three years in higher school Students come to the university at the age of 18-19 and it takes them three years to complete the university course. Two hundred polytechnic schools and about 2 dozen higher schools of technology turn out every year thousands of qualified technicians for various industrial concerns. The higher schools annually turn out more than ten thousand qualified technicians The polytechnic schools are the foundation stone of industrial education. They are maintained by provincial governments. They admit those who have completed six years in primary school, though there are some which require a higher qualification. They usually have a three-year course, in some cases with a two-year or even five-year course, and have departments in mechanical, chemical or civil engineering, and architecture, while there are some others which confine themselves to textiles, ceramics, or such other principal industries of the locality where the school is established. There are special schools for training in making hand paper, photography, watch-making, mining, electricity, etc. Some schools give morning, afternoon and evening courses Thirty to forty thousand students are annually trained in these schools which employ nearly three thousand teachers

CLASSES FOR WORKERS.

Industrial continuation schools generally give two years' training to those who take up jobs after passing out from primary schools. The Departments of Agriculture and Commerce also provide a similar training courses for workers. Since the whole structure of education in Japan is now undergoing tremendous changes under American occupation, I am omitting details about facts and figures, but I propose giving the latest data in the fourth edition of my book "Secrets of Japan," which will be published very soon.

SOCIAL INDUSTRIAL EDUCATION.

Japan is far advanced in social industrial education which is imparted through a wide net-work of science museums, commercial museums, libraries, motion pictures, radio, public lectures and industrial publications. Every branch of industry has special publications which provide details of latest inventions and best designs in each industry. Such publications are profusely illustrated and thus enable a simple home manufacturer to make those designs Manual training and industrial education are an essential part of school education. *We in India must draw up and carry out a similar plan of social industrial education for cottage industries.*

Boys Make Cycles.

This educational system produces wonderful results I witnessed in the Freedom School near Tokyo (founded by a woman journalist) fourteen-year old boys being taught to make cycles, school desks, chairs, watches and blueprints of machinery. When I visited the school I was surprised to see boys making watches.

Wonderful Industrial Genius.

The Japanese girls and boys have wonderful industrial genius. Our artisan families whether in Kashmir or Delhi, Jaipur or Mysore, Dacca or Hyderabad are equally gifted, only they need proper education and training in various crafts in modern technical schools like those in Japan. For example, take the Art Academy in Tokyo, which I visited in July on the eve of my departure from Japan. The boys were on strike (against increase in fees) the day I visited the institution, but I saw enough to give me an idea of what they were taught to become qualified artists The following table will give the full story —

TRAINING IN ARTS

Subject.		Number of students
Japanese painting		83
Oil painting		62
Sculpture	Plaster	60
	Wood sculpture	29
Art Technique	Picture design	72
	Metal carving	26
	Forging	17
	Moulding	30
	Lacquering	48
Architecture		61
Normal school (Training teachers)		72
Professors and teachers		75

Home-Made Machines.

No wonder with all that training in schools and the genius in their blood and art at their finger tips, Japanese mechanics are able to produce home-made machines for every small operation in any industry. Wherever I went I heard the same story. To my question " Where can we get this machine ?" the reply was " Oh, I made it myself and I will make one for your government too " These home-made machines are ridiculously inexpensive, some of them as cheap as ten to fifteen rupees (these are post-war prices) A modern spinning wheel with six spindles to be worked like a treadle sewing machine was offered

to me for Rs. 30. Scores of small machines to make confectionery, ropes, mats, buttons, necklaces, glassware, hosiery, chinaware, bambooware, woodware, strawware, dolls, etc., are available in Japan which can be easily reproduced in India Patent rights can be very easily reproduced and negotiated in India. I am assured by the President of the Board of Trade of Japan that experts and technicians from Japan would be very willing to come to India and advise us.

STORY OF A GENIUS.

In this connection the following true story related by Gunther Stein will be read with interest :—

One day in 1909, the spiral gear of a British made gas engine suddenly broke. Nobody in Japan could make a new one. The work was urgent. A short, modest little workman was found who succeeded, with his primitive tools, in copying the complicated mechanism which had been produced in England by the latest modern precision machines.

He still remains the modest little workman. He works from dawn to dusk in his gear-cutting plant which is the largest in Japan and probably one of the finest in the world. He wears a worker's blue overall ; his hands are oily. His three brothers are now working with him Together they own their factory worth 3,000,000 yen, and employing 260 workers.

NO FABULOUS SALARIES.

The chief and his three brothers do not take more pay from the factory than the highest-paid employee's 5.30 yen per day (6s. 6d at pre-war rates). The engineers just reach the average wage of the staff at 3.50 yen (4s 3d.) per day. The profits, which are considerable, are invariably reinvested in the factory. The owner has never taken a day off, does not drink, smoke or gamble, but is happy and enthusiastic. From a special fund he allows himself an expense account not exceeding 200 yen (£12) per month, but he hardly ever touches it except for the education of his children. He says that he considers the factory not as his property but as a trust which he is called upon to administer. Money, he says, does not interest him, it does not even give him an incentive. What he really wants is to cut beautiful gears. He has no other interests. He is proud of being an example to many Japanese industrialists who, in his view, spend far too much, live far too well and work far too little ! He served a hard apprenticeship with his father, and he maintains the patriarchal principle in his factory, though with high wages, an eight-hour day and two free Sundays a month.

This man is considered a technical genius. It is said that there is no gear in the world which he cannot reproduce accurately. And

gears are, after all, vital to the engineering industry, to modern armaments, to shipbuilding, and many other industries.

Not only Japanese but even Western engineers bring their most complicated technical problems to this original genius who taught himself to work with logarithms and mechanical text books, but who still relies more on his sight and touch.

A good deal of the progress of the Japanese engineering industry rests on the success of this small factory, which does nothing else but cut infinite varieties of gears from blue prints sent to them. According to authoritative British experts this factory represents one of the important pointers to the great future of Japanese industry.[1]......

COME TO THE VILLAGES.

Now let me take the reader with me to six out of the two hundred villages I visited this summer in my quest for knowledge about Japan's cottage and small industries. These villages are typical villages exclusively devoted to one of the home industries which are the life line of Japan. I will take you to an iron smith's village in the beautiful hills near Kobe, three historic villages concentrating on bamboo industries, a village producing hand-made paper in every home and a match-makers' village near Osaka Every one of these villages is situated in beautiful natural surroundings reminding me of Kashmir. There was abundant supply of water, electricity and cheap transport by bus, rail or boat and raw materials were also available on and round about the spot I have given the full story of Japan's power resources in another chapter. Here it will suffice to say that Japan is the fifth largest power producing country in the world and 90 per cent of her villages have electric lights in their homes and electric power to serve them in their small and domestic industries.

IRON SMITHS ALL.

First let us visit Miki, a historic village near Kobe. In Japan there are three famous hardware producing centres turning out fine tools and cutlery. They are Miki (near the port city of Kobe), Sakai (near Osaka), and Sanjo (in the province of Niigata) Sixty per cent of all the hardware products are produced in Miki It looks like a village but it may be described as a small town spread in 6 by 2½ miles, mostly on the two sides of a road along a serpentine river, which helps considerably in exporting goods to Osaka by boat. Here all are cast-iron smiths.

I visited more than a dozen home factories and was amazed to see their turn over, mostly from waste iron, scrap, etc A widow told me· "Everything I make here is from the iron bands which bring safely

[1] Made in Japan

preserved cotton bales from India." A young Japanese, a very prosperous looking and perfectly dressed in Western style, said "My uncle became a millionaire because of these iron bands from India." This youngman greeted me with "Jai Hind," "Bandematram" and "Netaji ki jai" and tried to use as many Hindi words as he knew. He told my driver in Hindustani "Charo-Charo" What he meant was "Chalo." The Japanese cannot pronounce L and say R instead. My name all over Japan was "Rar" and not "Lal" because Japanese fail to pick up L He said "I like very much chapati." Okada Kinzoku Co, Ltd. runs the biggest factory in the village, producing finest cutlery. This firm became a leader in pre-war hardware industry. Miki has a thousand year old industry. Out of its total population of 15,000, no less than 8,000 are engaged in the hardware industry. This place is famous for its saws, knives and agricultural implements, etc.

WORKERS ARE SHARE-HOLDERS.

In several factories I was told that the workers (who are mostly relations of the boss) are all share-holders and they work with pleasure and the result is high production How I wish we in India could also introduce this system. Unfortunately our plans remain mostly in the planning stage.

PAPER MAKERS' VILLAGE.

Now let us proceed to village Ogawa high up in the hills. It reminds me of Pahlgam in Kashmir The village is situated on a river bank and has a rich supply of raw materials for hand paper industry The river serves admirably as a free water channel for washing and cleaning the fibre. Out of a population of 13,000 persons (including farmers, artisans, school boys, shopkeepers, etc.) 3,500 persons are engaged in making hand paper. Every other house is a paper factory with its walls plastered with paper (being dried by coal or wood fire-where electric heat is not available) You visit any home and you will find pictures of the Emperor and his five children The picture of the Empress is rarely seen in a home

A FAMILY'S EARNINGS.

Let us visit a typical home factory. The proprietor is an old man Itosan and has a young, intelligent and charming wife (second marriage). Father, mother, two young girls and one relative are all working Their daily production is 800 sheets of paper, 3 feet by 2 feet. Their daily net income is one thousand yen, *i e*, about Rs. 11-8 according to the new rate of exchange They work 25 days a month and enjoy their five well-earned holidays The village has an up-to-date technical school and a laboratory where young boys and girls receive 6 months' training in making all kinds of paper. The school

serves as a training institute, a workshop, laboratory and a museum for this village industry. The moment you enter the school you find the plants (which supply fibre) growing in the compound. They are mulberry, kozo and mitsumoto. Kozo also belongs to the mulberry family. Bamboo is not used for hand paper industry.

HISTORY OF HAND-MADE PAPER.

With the advent of peace and a new pattern of living in Japan, people at home and abroad are showing increasing interest in Japanese paper. The revived interest of foreigners, as shown in their inquiries, is a happy augury for Japan whose economic recovery will hinge largely on the extent of her foreign trade.

The term " Japanese paper " is used here to denote its distinction from its sister product that goes to make daily newspapers, wrapping papers, paper boxes and the like. Japanese paper is strictly a product of the human hand, in humble country huts and not of the huge paper mills of Hokkaido or of the United States.

Once upon a time Japanese paper was as indispensable to a Japanese home as the straw mat. It covered the *shoji* and the *fusuma* (sliding doors and padded panels) centuries before the introduction of glass windows into Japanese dwellings. Despite this inroad of Western interior decoration into Japanese homes, the use of Japanese paper cannot be completely dispensed with in a Japanese home. Could one conceive of glass chandeliers in a Japanese " zashiki " (Japanese living room) replacing lamp shades of plain wood or bamboo frame covered with artistic Japanese paper ? And I think it would be equally unthinkable for doors of Western design to take the place of *shoji* and *fusuma* in a Japanese home for æsthetic and technical reasons. The gentle light that a paper covered *shoji* allows into a Japanese room is most congenial to the dwellers of this island kingdom which has great humidity in the summer.

Apart from Japanese use of this special paper, foreign businessmen are now demanding Japanese paper for many industrial purposes such as book-binding, interior decoration, packaging, etc. There is possibly one obstacle that must be overcome before an expanded demand can be met. That is production method. Until recently, the procedure in making Japanese paper was hardly different from that followed as far back as the fifth or sixth centuries. Prior to that paper was unknown here.

History has it that during the reign of Empress Suiko (610 A.D.) a representative of the King of Koma (a part of old Korea) brought the Chinese paper-making method into Japan.

Ancient paper makers learned to produce 180 kinds of paper from three prime ingredients. They were hemp, " kozo " (paper mulberry) and " gampl " (native daphne).

At first, Japanese paper was not as strong as it is known to be today. This characteristic appeared in the Kamakura period (12th century), possibly, as a reflection of the spirit of that era. First came the quality known as " danshi " (superfine), then the " Hikiai," " Sugihara," " Hosho," and finally " Torinoko," the reputed king of Japanese papers.

The industry took another remarkable spurt in the succeeding Tokugawa era (17th to 19th century) under the encouragement of various clan chieftains. At this time a fourth ingredient known as "mistsumata " (Edgeworthia Chnysantha) was added to the hand-made paper industry.

The intricate steps of paper manufacture are fascinating in their primitiveness. At the outset the barks of the kozo and mitsumata are stripped at the beginning of winter Gampi trees are peeled in spring and summer. Pieces of cut branches of the kozo and mitsumata are steamed before their bark is stripped but the gampi bark comes off after boiling. Bundles of wood are boiled in a huge cauldron and the stripping is done while the branches are warm. For this purpose the entire family is mobilised.

The bark strips (kurokawa or black skin) are temporarily stored after complete drying. Later they are soaked in running water for hours at a time. As they soften to some extent the outer covering is removed with special peeling knives by skilled hands. What remains goes in for another soaking in running water at which time discernible flaws such as knobs and fissures are removed. The result produced is called shirokawa or white skin

The shirokawa is then boiled in a mixture of lye and water until it becomes so tender that it can be easily torn with the fingers. After five or six hours the refined bark is due for another running water treatment, then beaten for a long time on a wood or stone surface.

A visit to the rural region in paper making season will be marked with monotonous sounds of clubs pounding paper pulp to the sad rhythm of traditional songs chanted by the village women.

The two modern manufacturing processes are classified as " Nagashisuki " and " Tamesuki " methods. The first uses " neri," a sticky extract of hibiscus manihot (a kind of rose mallow) which prevents the fibre from dissolving during its fluid state. This assists in strengthening the final product. The second method adopted in the middle of the Heian period and prevailing in most foreign countries both in the East and in the West does not apply the neri formula.

The pulp is strained and left in a container overnight. The following day it is pressed into sheets and later spread on wooden board. This is set out in the sun to dry. So the climate is the real regulator of production. However, under favourable conditions an average craftsman is able to dry between 1,000 and 1,500 sheets a day. The faint outline of wood grain which gives the paper attractive distinction is said to be the result of this drying process.

Lately some labour-saving devices have been incorporated to speed up production. In addition chemicals are being employed to bleach the kurokawa. Inspite of this the industry still defies complete mechanisation. The Japanese paper is still of necessity a handmade product requiring arduous toil and skill born of years of experience.

In the face of this apparent drawback, however, the Japanese paper craftsmen confidently speak of meeting any expanded demands and are eager to do so without sacrificing any of the paper's traditional beauty, strength and utility.

300 ARTICLES FROM PAPER.

The Japanese make three hundred articles of daily necessity from paper. According to Chamberlain : —

"The Japenese use paper for a score of purposes. One reason is that their process of manufacture leaves uncut the long fibres of the bark from which the paper is made, and consequently renders it much tougher. Fans, screens, and lanterns, sometimes even clothes, are made of paper. A sheet of nice, soft paper does duty for a pocket-handkerchief. Paper replaces glass windows, and even to a certain extent the walls which with us separate room from room. Japanese housemaids do their dusting with little brooms made of strips of paper and dabs of soft paper serve, instead of lint, to prevent bleeding. Oil-paper is used for making umbrellas, raincoats, tobacco-pouches, and air-cushions, as well as for protecting parcels from getting wet in a manner in which nc European paper is capable of. Paper torn into strips and twisted takes the place of string for a hundred minor domestic uses. I have even seen the traces of a harness mended with it. Then, too, there is the so-called leather paper, which is used for boxes and more recently for dados and hangings, and the crepe paper now familiar abroad as a material for doilies and illustrated booklets. Japanese writing paper, properly so called, lends itself admirably to the native brush, but not to our pointed pens, which stick and splutter in its porous fibre."....Chamberlain in " Things Japanese "

THE BAMBOO VILLAGES.

The three 'bamboo villages' I visited are situated near Kobe, Osaka and Kyoto, three important industrial and commercial centres.

Village Yamaguchi near Kobe is situated on a hill near the famous hot springs of Arima which are served by electric train and bus. The whole village is exclusively devoted to bambooware manufacture. Several homes I visited were nothing but busy factories, where the family members were rapidly turning out green split bamboo into beautiful baskets, vases, lunch boxes, trays and a hundred varieties of articles of daily necessity. The village headman, who is the main exporter and wholesaler, took me round various home factories and his huge store where nearly a hundred thousand pieces of bambooware were piled in rows in several large rooms in a two-storeyed building. The workers seemed to be quite prosperous, well dressed, well fed and happy. The village headman's house was like that of a rich zamindar in the pre-partition Punjab with the addition that he had a rich stock of artistic paintings, Japanese paper scrolls (hanging pictures) and the inevitable home temple dedicated to 'Buddha from India' (which debt the Japanese proudly acknowledge while meeting an Indian).

ELECTRICITY MEANS WEALTH.

In another bamboo village near Osaka I found how electricity meant dollars for the simple village mechanics. I saw young girls weaving bamboo screens (verandah size) on power looms (see picture) to the accompaniment of Japanese national songs. These home factories were producing heavy articles like screens and beautiful baskets for the American market This little village earns nearly two million U.S. dollars by exporting bambooware. India, the original home of bamboo where labour is still cheaper than in Japan and living necessities far cheaper than in Japan can surely share the U S. market and create many more in South America and other countries. An average worker on a power loom can earn three to four rupees a day (post war rate). The villagers were certainly more prosperous looking than the residents of bombed Tokyo.

Yet another bamboo village I visited near Kyoto produces the finest bamboo buttons, brooches, flutes and artistic bambooware. These are mostly painted by children and the destination of these products is the gay lands of Latin and South America (see pictures).

1,400 ARTICLES FROM BAMBOO.

Next to Buddhism bamboo was the most valuable gift that India made to Japan Now Japan grows more than a hundred varieties of bamboo. The uses of bamboo are almost numberless, but 1,400 ways of its use in Japan have been listed. Bamboo is one of the daily necessities in domestic life. It is used as New Year decoration from one end of the country to the other. It adds to natural scenery in Japanese gardening and a potted bamboo is a gem. It also plays an important role in Japanese architecture, for it is often used as an imposing pillar before the alcove, the sacred place in a Japanese house.

It is used for all kinds of furniture, which is far more beautiful than wooden furniture. Bamboo plywood is a great industry in Japan and tiles and ceiling materials made from bamboo are very artistic. Easy-chairs, tables, tea trays of beautiful designs, blinds, screens, baskets, flower vases, lanterns, umbrella handles, umbrellas, bookshelves and numerous kinds of utensils and vessels for domestic use are made from bamboo.

A firm in Tokyo is now manufacturing ladies' compacts, cigarette cases, chess boards and ladies' handbags (for the American market). These handbags are very popular in the United States They are made from smoked bamboo, obtained from the ceilings of old farm houses, which, because the houses have no chimneys, are discoloured by the smoke and soot of years from the family hearth This bamboo has a soft, rich silky appearance. Samples of all these articles are available at the cottage industries museum in New Delhi (see pictures). Several musical instruments are also made of bamboo and Lord Krishna's flute *Bansuri* is very popular in Japan Japanese make artistic flutes Lord Krishna playing his flute is enshrined in the largest temple at Nara.

BAMBOO A BIG INDUSTRY.

India, the original home of bamboo, can easily turn bamboo into a profitable export industry if only we adopt one hundred and forty of the 1,400 beautiful articles of bamboo that Japan produces Bamboo means a potent source of dollars since several villages export bamboo goods worth millions of yen to America every year. Japan has developed finer varieties of bamboo from the original Indian bamboo, say our experts but they never care to plant the finer Japanese bamboo in the terai of the Himalayas, in the U P., Bihar and Assam and also in the beautiful hill regions of Travancore and South India. What we really need is a planned study of the bamboo industry of Japan, inviting Japanese mechanics, importing Japanese machinery and buying Japan's patents. Then we can also produce bamboo plywood, tiles and what not.

BAMBOO PRODUCTS[1]
PROCESS DONE BY HANDCRAFT 95 PER CENT
BY MACHINE 5 PER CENT

Number of small (home) factories	14,000
Limited companies	Only 20
Workers engaged	150,000

Production centres—all over but particularly in Shikoku, Kansai

[1] We can manufacture everything in India if we want to Everyone of the items plus many others like umbrellas, parasoles, baskets, flower vases, lunch baskets and screens can provide a huge market for export abroad

PRODUCTIVE POWER.

Brooms	1,600,000
Veneer	1,000,000
Furniture	1,600,000
Rakes	16,000,000
Fishing rods	15,000,000
Fans (Paper and Bamboo)	13,000,000
Silk and (Bamboo) fan	2,000,000

Fans are manufactured exclusively in home factories which number 712 and there is no big concern or company manufacturing fans.

Cane chairs	160,000
Paper lanterns	1,000,000

FAMILY INDUSTRIES FROM FORESTS.

Besides lumber, woodpulp, veneer and plywood, the forests of Japan provide raw materials for many industries in the home, such as camphor culture, manufacture of pine oil and resins. Judge it from the report of family industries in the island of Shikoku alone.

Bamboo.

(*a*) Production: From 1943 to 1945, bamboo production averaged over a million bundles per annum. Over 1,216,000 bundles were produced in 1944 alone. Kochi and Ehime prefectures are the leading bamboo producers, exporting large quantities to other parts of Japan.

(*b*) Requirements: Kagawa is the only prefecture that needs to import bamboo, while the other prefectures are able to supply their own needs and also to export.

(*c*) Distribution: Bamboo is sold by the producer through a private agent or a forestry association to the prefectural bamboo control association which sells it to the consumer through its local distribution offices.

Veneer and Plywood.

(*a*) Production: Shikoku has one plywood mill and two others under construction. The former has a production capacity of 1,200,000 square feet annually. Production in December was 10,500 square feet, 11 per cent of full capacity.

(*b*) Requirements: As with lumber, local reconstruction calls for large quantities of plywood. Occupation forces are also requiring large quantities.

(*c*) Distribution: Plywood is sold to the local lumber company which distributes it to the consumer.

(*d*) Problems: Production is slowed down because of shortages of glue. Some log shortage is due mainly to lack of transportation.

Camphor, Pine Oil and Resin.

(*a*) Sixty-three camphor distilling units in Shikoku, exclusive of a few in the national forests, have produced an average of 74 metric tons of camphor oil and crystals yearly since 1943. Each of these units is generally operated by a family. They use the bark, wood, and leaves of varieties of cinnamonum camphora which are known locally as red camphor and blue camphor Tight control is exerted by the government-sponsored monopoly, the Camphor Control Association, which buys, distributes, and sells this product.

(*b*) Pine oil is produced by 390 units with over 1,100 ovens. Production has climbed steadily since the start of the war, because of the great demand for gasoline and oils. Production in 1943, 1944, and 1945 was 480, 1,360, and 6,740 metric tons respectively.

(*c*) Resin is usually produced by family units. Production in 1943, 1944, and 1945 was 760, 979, and 883 metric tons respectively and is expected to continue on this level in 1946.

Other Forest Products.

The forest contributes several other products to the economy of the Japanese people Acorns and dried mushrooms are used for food, and the bark of sugi and hinoki is used for shingles and siding, hemp palm for rope and brooms and Chinese galls for dye. The inner bark of hinoki is obtained for boat caulking. Cork, grass, leaves, and twigs are used by the Japanese family.

Mild mushrooms are consumed only in some parts of India and cost as much as Rs. 20 a seer in Delhi now. We can grow mushrooms in three different ways :—

(*a*) French mushrooms in dark rooms.

(*b*) The Japanese method of growing in log pieces.

(*c*) Mushroom farming on a commercial scale.

I will gladly supply details to readers.

PYRETHRUM IN JAPAN.[1]—A USEFUL SMALL INDUSTRY.

1. The pyrethrum industry in Japan began when root stocks of pyrethrum, or dalmatian chrysanthemum, were introduced from the United States in 1886. The industry developed to such an extent that by 1940 its principal product, dry pyrethrum flowers, was one of the most important exports of Japan.

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[1] *Source*—N R S report on forests of Japan

2. Since 1926 more than two-thirds of pyrethrum cultivation has been in Hokkaido. The crop also is grown in southern Japan along the Inland Sea, particularly in Hiroshima Prefecture.

3. The area devoted to pyrethrum culture reached a maximum of 29,050 hectares in 1936, declined to 20,000 hectares in 1941, and was reduced to less than 10,000 hectares in 1944 and 1945. Approximately 6,000 estimated hectares of this crop were cultivated in 1946.[1]

4. The two species of pyrethrum in Japan are (*a*) a red-flowered type (chrysanthemum roseum), for ornamental purposes only; and (*b*) a white-flowered type (chrysanthemum cinerariaefolium bocc) grown for the production of pyrethrum. This species is known commonly as the pyrethrum chrysanthemum.

5. Pyrethrum is propagated in Japan from seeds and crowns of the plants. Sowing seeds in plant beds and transplanting the seedlings to the fields during the following year is the predominant method of propagation.

6. Flowers, the main product of pyrethrum, are harvested when the plants approach full bloom. After careful air drying in sunshine the flowers are ready for marketing, or storage for later sale.

7. In Hokkaido several crops of flowers, one crop annually, may be harvested from the same planting of pyrethrum In southern Japan only a single crop of flowers is generally realised from one planting. The yield of flowers per hectare in Hokkaido is lower than in the southern districts. Because extensive fields are available in Hokkaido for growing pyrethrum the industry is centered there

8. The principal enemies of pyrethrum are the gall, withering, and wilt diseases. Two insects, trips and red spiders, attack the plants. They are of little consequence, however.

9 Farmers sell the pyrethrum product usually as dry flowers in 22 5 kilogram bags. The flowers are manufactured into numerous pyrethrum products in small factories.

10. Before 1941, 115 pyrethrum factories were operating. Only 25 were functioning in December 1946.

11. In 1937, the highest on record, 11,473 tons of pyrethrum products were exported. Of these, 8,844 metric tons were dry flowers.

12 Before 1940 over two-thirds of the annual production of dry flowers and manufactured products were exported. Most of the dry flowers were shipped to the United States. The bulk of manufactured products went to Asia or to the Pacific islands. No dry flowers or manufactured pyrethrum products have been exported since 1943.

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[1] Figures in this report, unless otherwise specified, are from the Ministry of Agriculture and Forestry.

PYRETHRUM MARKETING

Product.	Pyrethrin content, Not Less Than (Per cent.)	Marketing Unit.	
		Type Containers.	Weight of Unit (kg.)
Dry flowers, FAQ grade	0·9	Hemp bag, export.	50 00
		Bale (4 bags)	200·00
Pyrethrum insect powder ..	0·8	Paper carton or can	0·03
		Export bale (600 cans)	
Powdered pyrethrum	0·8	Paper bag	11·00
Pyrethrum extract, 6%	6·0	Bottle	3·75
Emulsion of pyrethrum, 3% ..	3·0	Bottle	1·88
Emulsion of pyrethrum, 1·5% ..	1·5	Bottle	1·88
Insecticide solution (spray) ..	1·2[1]	Can (5 gals)	20·00
Mosquito coils	0·5	Pack (10 coils)	0·13
		Export box (100 packs)	13·10

MATCH-MAKING.

The main cause of the very rapid growth of the match industry in Japan was the fact that it was mostly run in ' home factories' ; where labour was cheap. Family members with the help of some near relations run it in their sitting room (to be converted to bed room at night). The process of making matches is very simple. The workers require very little skill. Inexperienced women and children are the mainstay of the industry. Nearly two-thirds of the labour consists of women (see Table under " Saviours of Nippon "). In most cases they work at their homes. They make small boxes from wood (cut and ready to be adjusted) and they paste the labels on. They work so fast and in an enjoyable manner that the job is a thing of joy to them. The boxes are sent to factories nearby, where clever female hands stuff them with matches—all in one pick —their hands are so dexterous that the number of match sticks picked is exactly the number needed to fill a box.

HOME LOOM FACTORY.

In the chapter on small-scale industries I have given the full story of how 6/7th of the famous textile industry of Japan depends on home factories and small factories and how the best textiles made in Japan

[1] Pyrethrum content of solution depends upon pyrethrum content of flowers. It varies generally between 1 and 1 5 per cent

FAQ —Fair average quality.

Source —Ministry of Agriculture and Forestry. Japanese government

are made in the homes. A small home factory of six looms worked by cheap electri power daily produces three hundred yards of good cloth woven in many coloured patterns A home factory employing a husband, wife and a neighbour's child used to bring in an income of Rs. 90 per month before the war. The child was paid only a small wage since he got free meals and a few new suits of clothes. The electric charges per day amounted to six annas only. Now the conditions have undergone tremendous changes and inflation is responsible for the rise in prices to at least a hundred times, in some cases four to five hundred times. Salaries have also been increased a hundred to 200 times

Here is the pre-war picture of a typical home cloth factory in Japan presented by my friend Gunther Stein.—

In a small industrial town, at the foot of a beautiful mountain range, a small wooden house stands among rice fields and mulberry groves. In the house six broad iron looms, of the usual size, are worked by electricity. The staff of this small home industry consists of the owner, his wife and the neighbour's child, and they are all very busy.

They begin work in the morning at six o'clock. Three times a day they rest; twice for fifteen minutes and once for thirty minutes. The machines are stopped in the evening at half-past six. Then next day's work is prepared; the woman cooks a meal and the man writes his letters. Twice a month they take a day off.

There is no door between the family's bed-sitting-room and the workshop where the looms are rattling. The floor of this room is somewhat raised and is covered with a mat There is a low table, a few cushions and a small iron bowl to hold glowing charcoal. Beyond is the kitchen.

Each of the second-hand looms costs 90 yen (Rs. 70). They are sold in the village street just as elsewhere bicycles might be offered for sale.

WOMEN SOUL OF INDUSTRY.

Before I conclude this chapter I must salute the daughters of Nippon (Japan) who are the very soul of home industry. They are most hardworking and perfectly skilled in every art and craft. Art is in their blood and crafts at their finger tips. No wonder Japan leads the world in the matter of home-factories.

TAKE MACHINES TO VILLAGES.

But women and their artistic hands could not have achieved the miracle of Japan without the well-organised plan of the Japanese Government to take machines and electric power into every home.

If we are serious about our talk of home industries, we have to take the machines to the villager rather than take the villager to the machines and force him to live in city slums often drinking cheap liquor and smoking machine-made cigarettes (abandoning his huqqa).

We have talked and talked for thirty years of rural reconstruction and a constructive programme for the people. Let us make our villages prosperous centres of home industries. Thus alone shall we wipe out poverty, untouchability and other national ills Economic uplift will ring the death-knell of untouchability and other social evils. This was the message our beloved Bapu gave us when he said :

INDIA'S SALVATION LIES IN HER COTTAGES.

CHAPTER VI

SMALL-SCALE INDUSTRIES

BACKBONE OF JAPAN

MAKES 45 PER CENT MACHINERY

SMALL BUT CONTRIBUTION GREAT

TELL-TALE FACTS

WHY THEY ARE SUCCESSFUL

WEAVING A SMALL INDUSTRY

85 PER CENT HANDLOOMS

LARGE MILLS PRODUCE 21 PER CENT

LOOMS FOR HOME CONSUMPTION

RAYON A SMALL INDUSTRY

WOOLLEN GOODS TOO

NINETY PER CENT SMALL INDUSTRY

CYCLE FOR RUPEES SEVEN

FACTORY IN 400

BEST CYCLE FACTORY

DIRECTOR AND FATHER

ELECTRIC LAMPS

ALSO IN MATCH INDUSTRY

CERAMIC INDUSTRY

BRINGS FORTY MILLION RUPEES

GLASS INDUSTRY

LAND OF SMALL INDUSTRIES



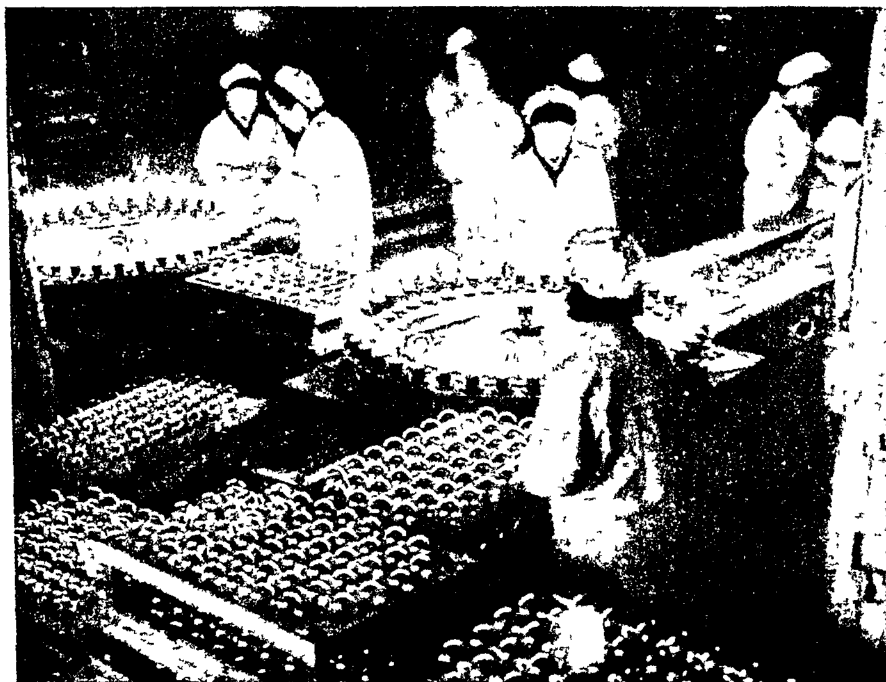
Fair hands making Matches



Paper Lanterns



Makes his own Sandals



Beauties make Bulbs



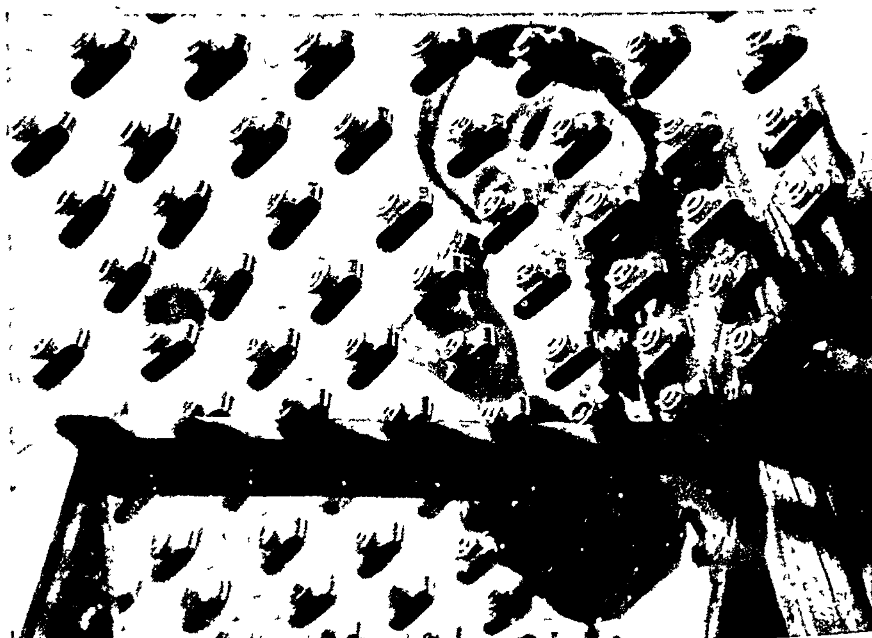
*" Parker 51 "
for Rupees Two*



Flowers on Fans



Fair hands make fine Clocks



Home-made Cameras

CHAPTER VI

SMALL-SCALE INDUSTRIES

Of all industrial enterprises in 1930 *fifty-four per cent were one-man workshops and forty per cent small plants with less than five workers.*

* * * *

Out of 210,000 *workers employed in the Textile Industry at the end of* 1932, *those employed in large mills having over* 200 *workers numbered only* 30,000 *or* 1/7*th of the total number of workers in the industry. Out of the remaining* 180,000 *workers,* 158,000 *or* 74 *per cent of the total were working in small mills employing less than* 50 *workers. . In the Specialised Textile Mills,* 5/8*th of the workers were employed in extremely small factories with less than* 5 *workers—Teijiro Uyeda.*

* * * *

Bicycle Industry is particularly suited for Japan because it fits in with the small-scale home industry.

* * * *

The Pottery Industry in pre-war Japan exported goods worth more than Rs. 45,000,000 (yen 56,019,000). *It was mostly produced in small home factories employing* 5 *to* 20 *workers* (62,235 *workers in* 6,566 *factories*).

* * * *

Only 34 *per cent of the machinery manufactured in Japan is produced in large factories,* 45 *per cent comes from medium size and* 17 *per cent from small establishments. Conditions in the Metal Industry are similar.*

Believe it or not, Japan's vast industrial empire owes its strength mainly to the so-called small industries which include 54 per cent one-man workshops and 40 per cent small plants employing less than five workers

The factory census for 1909, when the industrialisation of Japan had come to a head, showed that factories employing between 5 and 100 operatives accounted for 96.5 per cent of the total. A similar census for 1938, when Japan's transition from a country of light industries into one of heavy industries came into plain view, revealed that factories of the same description constituted 96.2 per cent of the total. These statistics do not include the innumerable workshops with less than five operatives. An expert says that of all industrial enterprises existing in 1930, there were 54.3 per cent one-man workshops and 40 2 per cent small plants with two to four workers each. With the expansion of the munitions industries after 1931, factories employing more than 1,000 workers increased appreciably. At the same time, plants with 30 to 50 employees sprang up in large numbers. Still, factories on tiny scales predominated.

SMALL BUT CONTRIBUTION GREAT.

The contribution of small-scale industries is not so small as the name suggests. Economic experts estimate that 65.6 per cent of the volume and 57.1 of the value of the merchandise exported from Japan in 1933 were accounted for by products of medium and small industries. Here is a report on the contribution of small industries by the Tokyo Chamber of Commerce for Tokyo alone.

COTTON TEXTILES	18·8%
WOOLLEN	28·8%
SILK	55·1%
HOSIERY	27·4%
HATS	29 %
BICYCLES	65·5%
PENCILS	91·5%

WHY THEY ARE SUCCESSFUL.

The factors that contribute towards the success of small-scale industries are enumerated as follows by the Mitsubishi Research Bureau :—

(1) The abundance of electric power resources enables small enterprises to obtain an adequate supply of motive power at low rates.

(2) Small enterprises mostly cater for domestic market, where changes in taste require prompt adaptation and a great deal of artistic sense in the design of such goods as cotton and silk textile fabrics, porcelain and earthenware, etc. These and similar articles do not lend themselves well to mass production, although their annual consumption reaches considerable proportions.

(3) Ample supply of labour and lower cost of living than in towns and cities. This is the reason why small-scale foundries have developed in Miye, Hiroshima and Nilgata provinces, and why the woollen fabric industry thrives in Aichi province.

(4) Minor industries in Japan have, as a rule, originated from household industries, and are even now marked by ties of solidarity and paternalism unknown in large factories.

(5) Small factories often work in co-operation with large enterprises Iron tubes and joints are manufactured at large factories, while parts of machinery can be produced at lesser cost at foundries run on a small scale. This is only an example out of many industries in which small establishments are supplementing the work of large factories. Of course the situation has changed after the war

WHAT THEY PRODUCE.

Among the products manufactured by the small-scale industrial establishments are dressed timber, woodware, provisions, silk and cotton textile fabrics, enamelled ironware, bicycles, hosiery, porcelain, earthenware, rubber goods, glassware and celluloid articles, etc.

WEAVING—SMALL-SCALE INDUSTRY.

While spinning is mostly done in large mills, weaving of textiles is mostly a small-scale industry in Japan.

According to the late Professer Ueda, out of 210,000 workers employed in this line of work at the end of 1932, those employed in large mills having over 200 workers numbered only 30,000 or 1/7 of the total number of workers in the industry. Out of the remaining 180,000 workers, 158,000 or 74 per cent of the total were working in small mills employing less than 50 workers And as most of the larger textile mills were spinning-weaving mills, among the specialised textile mills the importance of the smaller mills was rather big. At the end of 1932, looms numbering 80,000 or 2/5 of the total number of looms in Japan were owned by the spinning-weaving mills and 4/5 of this number were owned by large ones having over 1,000 looms with 400 to 500 workers. The six largest concerns (the Toyo, Kanegafuchi, Dai Nippon, Nisshin, Fuji Gasu, and Toyoda Spinning Co.) have more than half the total capacity or 42,000 looms, each having over 3,000 looms and between 1,400 and 1,500 workers. Those having less than 1,000 looms possess, among themselves, altogether 150,000 looms and even the smallest concern has over 300 looms and 140 to 150 workers In the specialised textile mills employing over 50 workers each, there were some 33,000 workers or 1/6 of the total force of all the specialised weaving mills put together. Smaller mills employ 150,000

workers with less than 50 workers each, and quite an astonishing fact is that 5/9 of this large force are in very small mills employing less than 5 workers.

IN JAPAN, HOWEVER, THOSE SMALL TEXTILE MILLS ARE MOSTLY ENGAGED IN WEAVING PATTERN GOODS FOR THE HOME MARKET, WHEREAS THE LARGER ONES, EVEN AMONG THE SPECIALISED TEXTILE MILLS, ARE PRODUCING THE GOODS FOR EXPORT.

At the end of 1932, of some 60,000 looms, installed in small mills of less than 10 looms each, 85·8 per cent were hand-looms used in producing pattern goods for home consumption, while only 6·3 per cent were power-looms which were used in weaving narrow goods for the home market and only 7·9 per cent were wide power-looms to weave wider cloth for export purposes. But in somewhat larger mills with 10 to 49 looms, the number of hand-looms constitutes 4·3 per cent of the total of 35,000 looms. The remaining 95·7 per cent are power-looms, among which 35,000 looms or 41·3 per cent were of narrow width, and those of greater width 46,000 or 54·4 per cent In the mills of over 50 looms, out of 220,000 looms, only 0·9 per cent were hand-looms Narrow gauged power-looms were 440,000 or 20·5 per cent and wide gauged power-looms counted 170,000 or 78·6 per cent. Hence most of the export goods of wide measurement came from mills with over 50 looms Out of a total of 220,000 power-looms at the end of 1933, 170,000 or 80 per cent were owned by these large mills. But in this figure were, of course, included the looms installed at the large spinning-weaving mills These larger mills had 86,000 looms or about 40 per cent, while the specialised larger textile mills, each owning over 50 looms, also had nearly 40 per cent, and the smaller ones with 10 to 50 looms had the remaining 20 per cent.

A similar tendency can be noticed in the production of wide cloths. In 1933, 3,800,000,000 sq. yds. of cotton textiles were produced in Japan. Out of this total, the large spinning-weaving mills put out 1,600,000,000 sq. yds , or 42 per cent and the specialised textile mills 2,000,000,000 sq. yds., or 58 per cent of the total output. But of the wide cloth woven in the country, those produced by large-scale spinning-weaving mills are exported to a greater degree than the others. In 1933, out of 1,600,000,000 sq. yds put out by the large mills 1,100,000,000 sq. yds or 68·7 per cent were shipped abroad, while the specialised textile mills shipped 900,000,000 sq yds or 42 per cent of their total output of 2,200,000,000 sq. yds In other words, the former group supplied 55 per cent of the total Japanese exports in 1933, while the latter supplied 45 per cent, or just short of one half of the total exports.

IT HAS ALREADY BEEN POINTED OUT THAT AS A WHOLE THE TEXTILE INDUSTRY OF JAPAN IS ORGANISED ON COMPARATIVELY SMALL-SCALE UNITS, BUT IN SO FAR AS THE EXPORT OF TEXTILE GOODS ARE CONCERNED, THEY ARE SUPPLIED BY LARGE-SCALE PRODUCERS, SPECIALISED AND OTHERWISE. IT IS INTERESTING TO NOTE THAT LARGE-SCALE SPINNING-WEAVING MILLS ARE ENGAGED IN PRODUCING SIMPLER ARTICLES LIKE SHIRTINGS AND SHEETINGS THAT CAN BE PRODUCED IN LARGE QUANTITIES, WHILE SPECIALISED WEAVERS DEVOTE THEIR EFFORTS TO PRODUCING ARTICLES LIKE DRILLS, SATIN, FLANNEL, CREPES, AND KOKURAORI, ALL OF WHICH CANNOT PROFITABLY BE MANUFACTURED BY LARGE-SCALE PRODUCTION.

RAYON—SMALL INDUSTRY.

Before the War Rayon Industry in Japan (which supplied beautiful saries at one rupee each) was also more or less a small scale Industry. This is what the survey conducted by the I.P.R (Japanese section) revealed in a pamphlet :

The number of rayon textile factories in Japan employing five or more workers and the number of persons engaged therein are set forth in the accompanying table. The number of factories has increased in every class. The greatest percentage of the total number of factories is occupied by those employing from five to nine workers, representing over one-half of the total. The total number of factories employing from five to twenty-nine workers constitutes almost 90 per cent of the total number, furnishing evidence of the extent to which small-scale mills are most predominant in this industry. The situation as to the number of workers is a little different. The total number of workers in establishments employing from five to nine persons barely constitutes one-fifth of the total in the industry. However, the workers of small-scale factories employing less than thirty each represent 60 per cent of the total number.

The respective amounts turned out by the various factories classified according to scale are shown in the table. Factories employing from 15 to 29 workers command the lead with respect to the volume produced, and in 1931, their output represented 27 per cent of the total amount produced. Factories employing from five to nine workers came next with a production percentage of 21 per cent of the whole. The total output of establishments employing less than 30 workers amounted to 60 per cent of the total production.

SCALE OF RAYON WEAVING FACTORIES IN JAPAN

Factory classes according to the number of workers	1929		1930		1931		1932		1933	
	Factories	Workers	Factories	Workers	Factories	Workers	Factories	Workers	Factories	Workers
TOTAL	944	13,560	1,360	21,487	1,647	25,144	2,014	32,574	2,381	42,753
5–9	497	3,237	719	4,695	885	5,603	1,070	6,832	1,243	8,005
10–14	157	1,885	224	2,615	273	3,196	300	3,500	351	4,193
15–29	212	4,416	277	5,558	329	6,629	416	8,339	479	9,562
30–49	53	2,050	90	3,337	100	3,786	137	5,140	181	6,745
50–99	22	1,533	35	2,402	42	2,842	69	4,792	91	6,214
100–199	3	439	9	1,892	12	1,604	16	2,249	34	4,585
200–499		..	5	1,444	6	1,484	6	1,722	10	2,926
500 & over .	..	..	1	549	..	.	..	..	1	523

Note. Excluding factories with four and less than four workers

90 PER CENT OF WOOLLENS TOO.

Woollen textiles are more a small industry than cotton. Ninety per cent of the woollen cloth is produced in small and home-factories as you will see from the tables in this book.

45 PER CENT MACHINERY.

In Machinery Industry also small scale industries are playing a very important role. According to the estimates of the Oriental Economist[1] 806,357 workers or 45.1 per cent of the total number of the working population in the metallurgical and machinery trades were in factories each employing less than five workers at the end of 1937. In chemical industries the small scale factories employ nearly forty per cent workmen.

BICYCLE FOR RUPEES SEVEN

The Bicycle Industry in Japan is another small industry. Only four per cent of the workmen are in factories employing more than 200 workers and 8 per cent in factories employing from 100 to 200 workers Sixty-five per cent workers are employed in factories each employing less than five hands Before the war a cycle could be had in Japan for Rs 7 Japanese bicycles were sold in Calcutta for Rs. 18 each. A factory (small one) could be built for Rs. 400 only because the whole thing was done on a small but efficient scale.

It is common knowledge that the bicycle is the assembled product of a large number of component parts, and of these essential parts there are more than thirty different varieties. In Japan, only a small

[1] The Oriental Economist (in Japanese) Oct. 15, 38 P. 191

number of the larger factories manufacture more than two kinds of parts or accessories, other factories limiting themselves to the production of just one or two component parts of the completed bicycle

A historical study of the industry in the country seem to indicate that this part, or accessory manufacture in Japan was first established with the idea of producing the various parts necessary in repairing the bicycles imported from abroad.

FACTORY IN RS. 400.

Thus from the very beginning the Bicycle Industry was organised into various units each producing just one or two parts necessary to produce the completed bicycle Under the foregoing set-up, it was possible to establish and run small factories with about 500 yen (then Rs 400, now only five rupees). Standardisation of the various parts of the bicycle was one of the prime factors which made a small factory system possible.

INEXPENSIVE MACHINERY.

The principal factor contributing to the existance of these small scale industries, says Professor Ueda[1], is the combination of inexpensive machinery used in the manufacturing process and the abundant supply of labour peculiarly adopted to this type of work Taking for instance, the machine for making handlebars he says

Among the various power-processes, there are some which may be operated by hand. Such simple machines do not require the attendance of an adult male, and in fact, they may be run adequately by housewives or children.

He summarises his report on the subject as follows :—

THREE IMPORTANT POINTS

(1) There is a high division of labour in the manufacturing end of the bicycle industry. Not only is the manufacture of just one part by one factory the common practice, but in a great many instances even the manufacture of one part represents a division of labour between several factories, each employing labour best suited to its own peculiar needs

(2) As the technique required in this industry is comparatively simple, labour can be drawn in the main from the ranks of juvenile or unskilled labourers of which there is a trend towards an over abundance in the country.

(3) Controlled production (and strict supervision of the quality) has eradicated most of the old abuses and at the same time, bettered the managerial organisation of the industry.

[1] I.P.R pamphlet on Bicycle Industry.

This also means higher reputation for Japanese cycles and I have personally seen the latest models which compete favourably with the British models

BEST BICYCLE FACTORY[1]

The following story of a pre-war cycle factory will give my countrymen an idea of the Japanese small industries .—

In a narrow side road, so typically Japanese, there are a number of small primitive workshops, one storey high, made of wood and corrugated iron Three hundred boys and young men are standing on the uneven floors of these workshops in front of small iron foundries, at modern shaping, paring, cutting and polishing machines, at galvanizing tubs, at tables for assembling and packing, and benches at which many of the machines needed for the production of bicycles are made.

This factory produces one of the best makes of Japanese bicycles Almost every part is manufactured on the spot, from the crudest raw materials to the finished frame Only the wheels and a few of the parts are brought outside from handicraft shops or modern factories. Two hundred of the men working in this factory are apprentices; 100 are regular workmen They are all earnest, obviously intelligent, and concentrate on their work They work from 7 or 8 o'clock in the morning to 5 o'clock in the afternoon with an hour's rest at noon, and, apart from the national holidays (among others five days' holidays at New Year) they have two free days a month. At present, as a result of the flourishing export trade, they work three and half hours' overtime daily

The apprentices are paid on an average 35 yen (Rs 28) a month Of this, in common with the regular workmen, they have a small allowance a month for their food, which is served three times a day in a simple clean dining-room They sleep in dormitories near the workshops These are small wooden Japanese houses with the rooms bare of furniture, but with mats covering the floors Each boy is allowed two *tatami*, that is to say, twice the space needed by an outstretched man. The *futon*, or Japanese beds, are kept in cupboards along the walls

The regular workmen, who live with their families, are paid 30 yen to 105 yen a month. The average wage is 60 yen (Rs 48) a month —from which Rs. 8 a month is deducted for food. Married men receive Rs. 4 more. [As in Europe, 'outworkers' receive much less —an average monthly wage of 30 yen for ten hours' work a day (exclusive of meal times) is paid to an outworker making chains

[1] Related by the famous writer Gunther Stein (whom I met in Tokyo) in his popular book " Made in Japan."

for a bicycle factory in Osaka] In addition, when trade is good, they receive a bonus of from £3 to £6 a year. A bonus of 6s. is paid when a member of their family dies, the same amount is paid at the birth of a child; a bonus of £3 (Rs 40) is awarded when they marry, and when a workman dies his family is given £18 The workman pays his insurance premium himself.

Director and Father.

The owner of this factory, a highly intelligent self-made man, is the technical director, the works manager, and the father of the working 'family' all in one. No expert and no trades union separates him from his workmen, the relationship between them is that which prevails in old handicraft plants. The foremen, half-appointed and half-elected, are the only supervisors in the plant. Their role is that of experienced craftsmen. Twenty of them, one from each department, form the works council. They wear a purple scarf round their heads, while the ordinary workmen wear red scarves and the helpers wear yellow or blue ones.

A whistle goes and the twenty members of the works council stand in line in the courtyard between the workshops. The senior member calls out to them and they bow low three times before their "father." The most efficient workmen wear bronze and silver medals, and at the front of the factory, in the modest office, there is a card index with their records and their photographs. Every month a note is made of the production of each worker, of their 'experience', their 'responsibility', their 'devotion', 'kindness', 'common sense', etc. To a certain extent their wages depend upon these records. (It might be mentioned that the owner has never been outside Japan).

The wholesale price of finished bicycles—about 200 are produced daily—is 30 yen (£1 16s). This price is almost three times as high as that of the cheapest Japanese mass-production bicycles, but the former seem to be of really good quality (A cycle could be had in Japan for ten yen, then Rs. 7 only)

This factory, which manufactures largely for the home market, has considerable export sales as well, and prints an attractive catalogue in English. It is typical of the second category of Japanese workshops manufacturing for export: super-handicraft establishments with modern machines, most of which are still served by hand. It is organised and managed according to patriarchal methods of handicraft tradition.

Electric Lamp Industry.

Electric lamps, heaters, irons and numerous other electrical goods are made in small factories.

The most important part in the electric lamp manufacturing industry in Japan is the small factories and workshops. These together manufacture by far the greater part of the lamps exported. Though the factories of the Tokyo Electric Company and the "standard" lamp companies are equal to any factory in Europe or America, the conditions in the small factories and workshops, which form the very basis of the recent rapid increase of exports, are by no means satisfactory.

There are two types of "town" electric lamps manufacturers. Some manufacturers carry on their work in their own homes, while the other do it under the factory system, even though their scale is very small The former had its origin before the Great War, when some persons began manufacturing miniature lamps as a by-occupation and it has since been growing more and more prosperous till it has become what it is today. Nevertheless, it is still lingering in the manual work stage. The latter kind of manufacturers, called "town factory" for the purpose of distinguishing it from the large-scale factory, appeared after the first World War, and has made rapid progress since the termination of the General Electric Company's patent on tungsten filaments. At first their chief business was to meet home consumption, but with the recent growth of the demand from abroad one manufacturer after another has changed his business to manufacturing for export purposes.

Most of the small "town" electric lamp manufacturers are skilled labourers thrown out of their work by the introduction of automatic machines into the factories of the Tokyo Electric Company and the other large "standard" manufacturing companies during the war boom. Those small-scale factories and workshops, therefore, have sprung up mainly in the south-western part of the city of Tokyo, which is the section where most of the factory labourers of the above mentioned electric lamp companies reside. Already before the first war, there had existed a number of factories in this part of the city as so-called "outside" factories of the Tokyo Electric Company, and had been engaged in the manufacture of raw materials and parts of electric lamps. After the Great War, the Tokyo Electric Company completed its programme of self-supplying of materials, and as a result thereof, these small factories lost their connections with the Tokyo Electric Company. They, therefore, began to change their business to supplying materials and parts to small manufacturers who were just beginning to spring up at that time. Thus this section of the city came to be an electric lamp manufacturing quarter, including every branch of lamp manufacturing.

Since then, this electric lamp manufacturing quarter of the city has always been prosperous, with the advantages of abundant cheap labour, convenient supply of gas, and its proximity to Yokohama.

And now more than 90 per cent of the electric lamps for export purposes are manufactured in this quarter. Besides Tokyo a few small " town " electric lamp manufacturers for export purposes are to be found in Osaka, and of late in Korea.

These small manufacturers produce only the small-sized lamps, such as fancy bulbs, flash bulbs, automobile lamps, etc. and do not manufacture the house lamps, except for a few of the comparatively larger and excellent factories. The bulbs for decoration and automobiles are chiefly produced in the " town factories," and a large number of family-scale manufacturers are generally engaged in making miniature lamps such as flash bulbs and miniature fancy bulbs, etc.

In the matter of equipment and of technique, these " town factories," or small workshops, are much inferior to the large factories. The process of flash bulb manufacture is especially so simple that there is naturally no machine in the process, and not a few of them are manufacturing lamps by hand with only one gas burner in their own homes.

The most prominent functionary or pivot of the small-scale " town " electric lamp manufacturing system is the middleman or merchant employer. The small-scale " town factories " or family-scale workshops are in fact nothing but the factories under the direct or indirect control of these merchants. The merchants, accepting orders from the exporters in Yokohama, buy materials from the materials manufacturers. Then, they put out the materials to these small factories or workshops, and let them manufacture the articles. When the articles are completed they are again collected by merchants and sent to exporters.

The relationship between the merchant employers and these small " town " manufacturers is sometimes nothing but that of buyer and seller, but usually the latter may be called mere outworkers who receive piece-wages for working for the former. Small " town " manufacturers very often get advances from the merchants, and thus sink themselves under the control of the latter. Some of them are entirely dependent on the merchants who provide those manufacturers with factories, machines, materials, labourers' wages, and their own living expenses.

Of late there has been a tendency among the comparatively large " town factories " to come into direct contact with the exporters discarding the intermediate merchants. But these factories do not have enough productive capacity to meet the orders with their own equipment, and hence orders are again put out to the smaller manufacturers around them. And in this case we cannot deny that these factories are to some extent under the financial control of the exporters.

The relation between the family-scale flash bulb manufacturers and the merchant employers is much more close. They are financially as well as morally under the control of the merchant, often borrowing money from the latter in case of birth, death, and illness, etc.

No dependable survey as to the number of these small-scale " town " manufacturers has yet been made. In fact, their rise and fall, moving and changing, are so frequent that it is almost impossible to know the precise total number at any given time. It is said, however, that the number of " town factories " with 5 or more workers is about 300 and their workers about 6,000 to 7,000. Women workers occupy 50 to 60 per cent of this total. Most of the small-scale " town factories " employ less than 30 workers, and the factories with less than 15 workers occupy 50 per cent of the total number of factories. If we add to this the number of factories with 15 to 29 workers, the percentage will rise as high as 90 per cent. If we classify the factories according to the respective amounts of their capital, the number of factories with a capital of less than 1,000 yen occupies 22 per cent of the total, including all the larger factories. The percentage rises to 42 per cent, if we add the number of factories with a capital of less than 5,000 yen.

ALSO IN MATCH INDUSTRY[1]

Workers in each plant	1924	1928	1939
5— 10	10	7	20
10— 15	7	7	19
15— 30	15	17	36
30— 50	15	10	21
50— 100	20	21	26
100— 500	30	16	18
500—1000	2	3	2

The figures in the above table are self-explanatory. The industry thrives mostly because of home-factories and small plants. The plants with over 500 workers numbered only two in 1939. The industry is just coming back to life after the terrible devastation of the War.

POTTERY WORTH MILLIONS

Pottery making brings Rs 45,000,000 to Japan Most of the raw materials needed for the production of pottery in Japan are obtainable within the country. The art of pottery making has been handed down from generation to generation as a small-scale domestic industry. This is what accounts for the artistic beauty which characterises Japan's pottery. While on the one hand the industry

[1] Figures supplied by B M Kato, Nippon Match Co , Kobe.

is continued to this day on a small domestic industry scale, on the other hand, up-to-date factories have been developed where the production is undertaken on a mass scale. The pottery industry, however, whether on a small or large scale, has made unusual developments in the country, and now are produced articles such as tableware, kitchenware, decorativeware, insulators, electricalware, tiles, sanitaryware and so-on.

In pre-war days the industry had 6,566 factories with 62,235 workers producing an annual output corresponding to 115,191,000. The amount of export was 56,019,000, *i e.*, Rs. 45,000,000.

The development of export has its beginning somewhere around 1867 when passengers and crews of foreign ships took back Japanese pottery as souvenirs. However, export in the true sense of the word really started around 1910 or 1911 and developed fully between 1915 and 1917. Japanese pottery became famous in the world market Although it has had its ups and downs as any other product has, it survived in the fierce competition of the world market

Unfortunately the pottery industry was curtailed during the war, but after the war large quantities have been shipped to the United States and other countries.

1,100 Domestic Factories.

Glass and glassware were manufactured before the war (1936) in no less than 1,100 domestic factories with a production capacity of 38,000 tons In November 1946 it had fallen to 13,680 tons, but with the survival of home industries the production has reached 50 per cent of the pre-war level Japan is once again competing with European and American markets in the supply of cheep pottery and glassware

Two Crores From Glass

Export destinations of Japanese glass manufactured goods were mainly Asia in the past, and the quality of these goods was claimed to have come only midway to world standard The average amount of exports during 1927-1936 was approximately 30,000,000,000 per year, *i.e.*, Rs. 2 crores

Owing to World War II, production was controlled and exports were blockaded Moreover, various factories in Tokyo, Osaka and Nagoya were considerably damaged as the result of the war.

As soon as the war ended, the remaining factories began operating and are being gradually reconstructed, manufacturing products for the use of the Occupation Forces and for export.

A statistical list of the past exports in 1937 is shown hereunder.

Actual results of glass manufactured goods, arranged according to country :

Name of Country.	*F.O.B. Price* *Yen*[1] 1937
Manchuria	1,369,723
Kwantung Districts	1,179,770
China	1,161,348
Hong Kong	372,576
India	7,214,712
Straits Settlements	1,336,943
Nertherlands East Indies	3,435,721
French Indo-China	234,420
Philippine Islands	1,990,749
Siam	763,260
England	890,150
United States of America	4,543,037
South America	1,069,547
Canada	258,462
Mozambique	286,554
Australia	1,412,092
New Zealand	446,004
Other	5,606,951
TOTAL	33,572,025

[1] A Yen was roughly ¾th of a rupee before the war

CHAPTER VII

SMALL INDUSTRIES PLAN

CHAPTER VII

SMALL INDUSTRIES PLAN

Smaller enterprise is essential to a sound and prosperous national economy

*　　*　　*　　*

Among the products manufactured by small-scale industrial establishments are dressed timber, woodware, provisions, silk and cotton textile fabrics, enamelled ironware, bicycles, hosiery, porcelain, earthenware, rubber goods, glassware and celluloid articles, etc.

" Small industries are the backbone of our national economy and I as president of the Board of Trade advise you to tell your Government to supplement major industrial plans by organising a thorough and workable plan to build small-scale industries in your country of vast resources Thus alone you can lay a firm foundation for the nation's economic structure".

This was the message Mr. Nagai gave me at a farewell lunch at Prince Takamatsu's (Emperor's brother) house three days before I left Japan. Everything that I saw in Japan during my sixth visit convinced me of the truth and significance of his message The Government of Japan is sincerely following his advice and working hard for Japan's industrial recovery

PLANNED SMALL INDUSTRIES

In Japan, since most of the industries mentioned below are operated on a small scale, they are expected to be in future the objects of " Small Enterprise Measures " in actual cases. Some of the other Industries not mentioned here will also be taken up as the objects of this programme, if they are considered to be properly classified into the category of small enterprises in view of the number of employees, quantities of production, invested capital and the method of management.

1. Textile industries :-

   Cotton weaving, wool weaving, rayon weaving, hosiery, towel, cloth products (handkerchief, table-cloth, white shirts, etc.), fishing nets, cotton refining, flat braid.

2. Machinery industries :-

   Farming machinery and instruments, civil engineering instruments, hand-saw, file, machinery and parts thereof, electric communications.

3. Metal industries :-

   Casting, gilding, wirenets, iron and steel manufactures.

4 Ceramic industries :-

   Porcelainware, glassware, enamelled ironware, Japanese roofing slates, brick, asbestos, slate.

5. Others :-

   Matches, light metals, iron and steel, and non-ferrous daily necessaries (European style plates, pots and kettles, stoves, wall-pumps, sharp-edged implements, sewing needles, etc.), rubberware, leather and hideware, wooden furniture, plasterware, stationery and other office goods, toys, leather bags, lacquerware, athleticware, celluloid manufactures, artificial pearl, decorationware, umbrella, Japanese umbrella, bamboo goods.

SPHERE OF SMALL INDUSTRIES.

The "Small Enterprise Measures" abstract standards may be roughly stated as follows :-

When an enterprise has a small number of employees, when the person running it is himself exclusively engaged in its management, when its ownership and management belong to one person, when the invested capital, production, sales and the quantity of goods handled by the enterprise are small in comparison with the general standard of the same industry and when the sphere of activities of the enterprise is few small fields and has no investment relations with other corporations, then such an enterprise may be called a small enterprise. Such industrial, undertakings need proper guidance from outside concerning management, technique, finance, tax payment technique, statistics and other general business because they are inefficient in such matters

CONSTITUTION OF THE BOARD.

The following is the text of the constitution of the Board of Small Industries promulgated early this year in Japan :-

Article 1. *General Purpose*: Small enterprise is essential to a sound and prosperous Japanese economy. It is considered that small, efficient, independent enterprises will serve as a bulwark against concentrations of economic power and provide opportunity for the industrious to follow the legitimate callings of their choice Accordingly, the purpose of this law is to establish conditions which will assist in the development and successful operation of small enterprise.

Article 2. *Board of Smaller Enterprise*: *Director-General.* A Board of Smaller Enterprise, thereinafter referred to as the " Board " shall be established within the Ministry of Commerce and Industry, headed by a Director-General who shall carry out the provisions of this law.

Article 3 *Functions*: The Board shall, through its Director-General and own staff personnel, exercise the following functions.

(a) It shall gather, analyse, and freely disseminate information concerning such matters as procurement and availability of materials and substitutes, production methods, inventory maintenance, merchandising, distribution salesmanship, shipment, engineering, management, advertising, credit selling, available sources of credit, taxation, accounting, fuel and power utilisation, labour relations, government procedures and on all other matters pertaining to efficient business methods and to the development and successful operation of smaller enterprise.

(b) Its staff and facilities shall be available for the purpose of examining into and diagnosing the affairs and operations of any smaller enterprise to which it shall submit its findings and recommendations. The diagnosis shall be made only upon request of the smaller enterprise and the recommendations shall not be binding in any respect.

(c) It shall consult with laboratories and research institutions regarding their available facilities and techniques and shall encourage but in no way require the utilisation of such facilities and techniques by smaller enterprise.

(d) It shall encourage but in no way require new and useful products and processes on the part of smaller enterprise.

(e) It shall hold expositions to display the products and processes of smaller enterprise.

(f) It shall prepare studies of economic conditions affecting smaller enterprise and shall be empowered to express its opinion on all bills affecting smaller enterprise which shall have been introduced into the Diet.

(g) It shall work in co-operation with all other parts of the central and local autonomous Governments whose activities affect smaller enterprise.

(h) It shall hold its staff and facilities available to all persons who shall have complaints that some Government action has affected their business in an arbitrary or discriminatory manner, or that some private action restrains their trade or is an unfair method of competition. In the latter instance, the complainant shall be referred to the Fair Trade Commission.

Article 4. *Organisation*: The Board shall be composed of a Secretariat, which shall be in charge of administration and personnel, a Promotion Bureau which shall be in charge of the functions set forth in Paragraphs a, e, f, g, h of Article 3 and a Fostering Bureau which shall be in charge of the functions set forth in paragraphs b, c, d of the same article.

Article 5. *Personnel*: All functions of the Board shall be performed through its own personnel and the Board shall, among such personnel employ persons skilled in the efficient operation of enterprise as well as persons of exceptional learning in economic matters. The necessary matters concerning personnel shall be regulated by Cabinet order.

HAPPY BEGINNINGS

Here in India too we have already made a start and the Government of India has constituted a Central Board of Cottage Industries. The first meeting of the Board was recently held at Cuttack and elaborate plans were chalked out Those interested in the Activities of the Board may correspond with the Director of Cottage Industries, Government of India, New Delhi. The Board will very soon start publishing its own quarterly journal which will give detailed reports of the progress of cottage industries and small industries in different provinces It will also publish useful and instructive articles on cottage industries. The journal will be published both in Hindi and in English

A series of illustrated pamphlets on a number of cottage industries will also be published and new designs in cottage industries will be brought to the notice of our artisans.

CHAPTER VIII

CO-OPERATION—THE KEYNOTE

FAMILY OF EIGHTY MILLION

NATION OF CO-OPERATORS

BASED ON GERMAN MODEL

" ECONOMIC COMMUNISTS "

VILLAGE EARNINGS ARE POOLED

WORKERS—FACTORY SHAREHOLDERS

IDEAL CO-OPERATIVE VILLAGE

PLANNED VILLAGE INDUSTRIES

DISTRIBUTION OF TOOLS

COMMUNITY COOKING

SEWING CLUB

RECREATION FOR ALL

GUARDIAN OF HEALTH

AGRICULTURAL CO-OPERATIVE ASSOCIATIONS

NEED, PURPOSE AND AIMS

TASK BEFORE CO-OPERATIVES

NEW CO-OPERATIVE LAW

TWO-FOLD FUNCTION

CHAPTER VIII

CO-OPERATION—THE KEYNOTE

Japan presents an ideal picture of co-operation between Capital and Labour because in the post-war industrial organisation most factories have workers as their shareholders. Kyowa Rubber Industry Company of Osaka has sold 80 per cent of its shares to its 300 workers.

* * * *

Japan's co-operative system boasts of a village where the co-operative society controls the size of village population and the entire village income is pooled together and spent for common good Read the story of ideal co-operation as practised in Japan.

The whole of Japan can be described as a family of eighty million co-operators The co-operative system which was imported there from Germany found a fertile ground for its growth since the Japanese national character has co-operation as one of its strong pillars. I have been eight times round the world. In no other country I found so much co-operation among the people—rich or poor, industrialists or labourers, shopkeepers or Government servants. Every office has some kind of a co-operative organisation, every bazar has a co-operative committee to celebrate festivals and special sales weeks when every shop is decorated like a bridal house and the result is mutual prosperity. Women have co-operative committees to extinguish fires which mostly start in the kitchens Over 90 per cent of these kitchens are made of wood. Women have also co-operative committees to see that every housewife sprinkles water in front of her house to keep off dust. The same system is applied to all shopping centres and results in huge savings to municipalities.

BASED ON GERMAN MODEL.

The system of co-operative societies in Japan was until recently based on that of Germany in many respects In Germany agrarian co-operative societies at the end of 1933 represented 78 per cent of the total number of co-operative societies throughout the country, while

in Japan they constituted 90 per cent with a membership of 3,694,000 at the end of that year. Apportioned to the size of the population 41.29 per cent of all households in the country and 65.4 per cent of all agricultural households are represented in co-operative societies[1]. Now the whole structure is undergoing important changes under the rule of the SCAP. The most important functions of co-operative societies are the operation of a credit system and the provision of facilities for joint purchase and joint sales.

The principal merchandise handled are rice and cocoons (joint sales) and fertiliser (joint purchase).

More than 98 per cent of agricultural warehouses are under the management of co-operative societies. Moreover, as joint organs for the sale of farm produce, marine and dairy products, there are also, under the management of industrial co-operative societies, facilities for marketing goods in certain specified localities. Marketing organs of the co-operative societies undertake the delivery of farm, dairy and marine products, and safeguard the common interests and welfare of the producers in their respective localities.

ECONOMIC COMMUNISTS.

To begin with, I present the reader a typical story of co-operation practised by residents of a Japanese village which controls the number of its residents by forcible deportation of unwanted sons whom the village resources are unable to support.

It is the story of the tiny island of Hatsushima, steeped in mystery and legend, related by BCON, an interesting military daily.

It is a strange island, whose 400-odd inhabitants live lives of tranquillity, isolated from the outside world by the often treacherous waters of the bay.

To visit Hatsushima is like finding a piece of the past.

The customs of these people have changed little since the island was first populated. They have no roads, no automobiles, no telephones and no electricity. But they lead happy lives without those very things we consider essential.

THERE ARE 42 FAMILIES ON THE ISLAND AND THEY LIVE AS A COMMUNITY. THEY WORK TOGETHER AND PLAY TOGETHER, AND ALL THEIR EARNINGS ARE PUT INTO A COMMON FUND WHICH IS USED FOR THE NEEDS OF THE COMMUNITY.

When they were described as Communists in a recent newspaper article, however, the islanders were indignant. " We are not political Communists," headman Tanaka-san explained, " only economical

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[1] According to the Year Book of Co-operative Societies

Communists. It would be better to describe us as living by kyodo." (Kyodo translated from the Japanese means co-operation).

HATSUHIMA, WHICH HAS A CIRCUMFERENCE OF ONLY TWO AND A HALF MILES, CAN SUPPORT ONLY A LIMITED NUMBER OF PEOPLE. WHEN THE POPULATION RISES BEYOND A CERTAIN NUMBER LOTS ARE DRAWN TO DETERMINE WHO SHALL BE DEPORTED TO THE MAINLAND. THE INCREASE IN POPULATION IS ALSO CONTROLLED BY THE FACT THAT ALL SONS OTHER THAN THE FIRST BORN TO A FAMILY ON THE ISLAND MUST BE SENT TO THE MAINLAND TO LIVE.

Living in the same houses as their forefathers, the people follow the Sodoshu religion—one of the Buddhist sects—and make their living from the sea.

The village of 42 houses and two schoolrooms lies in a quiet dell, surrounded by a wood of camellia trees. Through the wood small muddy paths meander across and around the island.

The main industry of the islanders is the collection of seaweed and shell-fish. Not far from the rocky shore young girls surface dive for tengusa weed, or heaven grass. The girls are known as " Amahs " meaning women and nuns, and are all between 17 and 20 years of age. They arrive on the island in May, and stay there working until the cold weather sets in around October.

They originally came from Toba, where they were trained in the art of diving from early childhood, and have good matrimonial prospects in view of their good health and the high wages they command.

The girls generally make by gathering seaweeds around two or three hundred yen a day. That is quite a lot when compared with the 100 yen a day basis wage of girls employed in the offices on the mainland.

While they are working the girls wear very little in the way of clothing—the most important item being a head-cloth to keep the hair out of their eyes They also wear thimbles to protect their fingertips when collecting the weeds. Their nakedness does not embarrass them.

The Amahs are strong and well-built, their strength and stamina increasing with the amount of diving they do. It is this fact of improvement in health rather than deterioration that has led to the employment exclusively of girls in this type of work. The islanders say that male divers soon show signs of strain, and are particularly prone to develop lung and other chest troubles after a few months of diving. Also, the girls are practically proof to the cold they experience many feet below the surface of the sea.

As a rule the girls work in depths of water between 15 and 20 feet, but sometimes they dive as deep as 30 feet. The work calls for excellent eyesight as well as good general physique, because the seabed and dark weed are barely visible through the gloom prevailing at such depths.

The Amahs, on surfacing, put the weed they have gathered into floating wooden tubs, which are periodically gathered in by men manning the boats, and the weed wrapped in nets for transport ashore.

When the boats return to the beach the girls help to haul them ashore, heaving and straining on the ropes until the boats are well out of the way of the tide.

They take frequent rest, working for an hour or two and then returning to the shore on the boats to unload the "catch" and to warm themselves by woodfires on the rocky foreshore.

Other girls—local residents—as well as men, take over the work at this point. They are employed in sorting and storing the weed in large wooden storehouses behind the beach.

At present there are about 35 girls working on the island, diving for various weeds and shell-fish.

Some of the weeds are dried in big wooden storehouses and various properties are extracted from them, including a powder which is used for making agar-agar, a kind of gelatine for medicinal use. Other weeds, after drying, are sold to wholesalers who supply them to the stores, which sell them as food. Some of these weeds are considered a great table delicacy by the Japanese[1].

The same spirit of co-operation prevails in many small factories where workers are shareholders and therefore their own bosses.

IDEAL CO-OPERATIVE VILLAGE.

Everyday and every hour of my stay in Japan wherever I went I heard of this wonderful co-operation in Japan. The leading journals are always full of articles discussing the subject.

Minoru Umizumi, an official of the Ministry of Agriculture and Forestry, sketches in IE NO HIKARI his idea of an ideal village "created by the Agricultural Co-operative Association." In Umizumi's envisioned community, former bosses and landlords "tried to gain directors' positions in the Association to control the village as they used to," but the farmers "succeeded in excluding them from the staff of the organisation" Through the Association, efforts are made to increase labour efficiency by co-operative arrangements for irrigation, use of tools and motors, and tilling of the land The Association encourages and sponsors the use of cattle and horses Complete

[1] R Palmer in the BCON.

utilisation of all available labour is sought. "Thus some village industries were planned A sewing machine factory was established and many of the villagers work there. Some packing industries also are under way . . . other persons engage in the production of starch, sauces, and rabbit furs."

"Farmers deliver their wheat and rice through the Association," Umizumi continues, "and turn in polished instead of unhulled rice. *Nuka* (a powdered bran by-product of polishing) is used for making fertilisers and also for the manufacture of oil. The Association produces salt and rations it to members at proper prices; it also handles the distribution of fertilisers and tools. It keeps five sets of women's wedding clothes for hire, and is able to obtain working and everyday clothes by exchanging agricultural products for unused clothes in a neighbouring village A sewing club has 150 members and a club room, and shares the use of sewing machines. Community cooking is carried on with some success in this imaginary village, and the Association employs dieticians to enforce observation of proper nutritional principles through the preparation of seasonal products and the efficient utilisation of eggs, meat, and milk." An important objective of the Association is the improvement of kitchens. The organisation contributes 10 per cent of the expenses used for this work.

WOMEN DIRECTORS.

Three or four of the Association's directors are women, who head the Women's Society. This group encourages radio listening, circulates magazines, holds instructional meetings on cooking and dressmaking, and organises movie and theatre parties The Association has a library, a nursery, and a medical office in the village. The savings of members are invested for the direct benefit of the organisation and the improvement of its agricultural activities

Such is the Japanese vision of an ideal co-operative village. The United Provinces or Madras may be able to present such an ideal village since pioneer work in co-operation has been going on there for several years.

AGRICULTURAL CO-OPERATIVE ASSOCIATIONS

The Co-operative Associations are the hope of new Japan and are therefore much discussed in the press.

Much of the material dealing with the new agricultural co-operative associations is of a promotional nature and is directed towards the nation's young men and farmers. Writers seek to disseminate full information about the co-operatives and their possibilities, in order to arouse the interest of all potential members. In an effort to popularise the organisation programme, officials of the Ministry of Agriculture and Forestry often contribute original articles for magazines and appear in round-table discussion groups

The co-operatives are expected to seek better agricultural production methods, carry on group purchasing and selling activities, encourage technical improvements, promote co-operative farming and sharing of tools, undertake community projects which are too large for individual farmers (who have previously depended on the " landlords' benevolence ") and to sponsor local industries.

NEED, PURPOSE, AND AIMS.

Takao Hattori, a Ministry of Agriculture and Forestry official, explains the purpose of the new agricultural co-operative associations and the processes of their formation in the youth magazine *SEINEN*. Beginning with a description of the militaristic and feudalistic characteristics of the wartime compulsory Agricultural Association (Nogyokai), Hattori tells why this organisation is to be disolved and replaced by " a new system founded on a spirit of democracy " He discusses the procedure to be followed in organising the new co-operatives, stressing that the objective is to gain the participation of as many farmers as possible in a truly co-operative organisation " which is really wanted by the farmers. The new co-operatives must be formed democratically by the farmers," he warns, " and must not be dominated by bosses and those who formerly held power."

The Agricultural Co-operative Association, Hattori writes, " is a co-operative organisation of all the farmers, and is designed to raise the social and economic standards of the villages. It not only must represent the interests of the farmers justly, but also remedy the defects of Japanese agriculture in order to increase production. By co-operation farmers can accomplish important things which cannot be undertaken by individuals. The more practical use the farmers make of the co-operatives, the more they will benefit. The important task of agricultural co-operatives is the democratisation of rural villages. Agricultural co-operatives afford the individual farmer the best means of exercising his power to establish democracy in the villages It is hoped that farmers will keep themselves well informed about agricultural co-operatives and will create fine organisations, thus assuring themselves of a prosperous and happy future."

Yukio Ishibashi similarly explains the significance of the new co-operative associations in an article for *NOMIN*. "The most important characteristic of the agricultural co-operative associations is that they are the farmers' own independent organisations for the modernisation of farm operations and the improvement of agricultural methods through mechanisation of farm villages and full realisation of the land reform programme " Although the scale of farm operation is small and the farmers' economy is not satisfactory, land reform has eliminated the major obstacle to production increase and

modernisation of methods And now the agricultural co-operative associations are coming into being in order to accomplish social and economic changes, Ishibashi declares

The co-operatives must sponsor improvements in many aspects of farm life and operations. Ishibashi mentions (1) encouragement of comprehensive, many-sided farm operations with stress on the utilisation of domestic animals ; (2) obtaining and distributing proper farm implements, and introducing machines and cattle-powered tools to replace manual labour ; and (3) improvement of farming methods and techniques on a scientific basis.

Ishibashi also discusses the necessity of reorganising and combining isolated and dispersed plots of farmland, establishment of community institutions, joint handling of supplies and funds, merchandising of products, co-operative farming and community utilisation of animals and tools Finally, he stresses that " the agricultural co-operative associations should have capable, democratic-minded agricultural technicians to serve as consultants for the scientific development of farming."

Kanae Hatano, an ex Minister of Agriculture and Forestry also declared at a *JITSUGYO NO NIPPON* round-table that it was important to push the development of agricultural co-operatives, because " Land Reform is not a sufficient programme unless the small landholders can combine in co-operative organisations and advance towards co-operative production." Furthermore, " when Japanese agriculture must compete with that of the rest of the world, it will have to develop many-sided operations, and for this we must rely on the agricultural co-operative associations." Hyakuju Kurihara, another Ministry official, voices his opinion that the co-operatives must seek to promote increased agricultural production, while Hatano stresses that he expects them to accomplish " democratisation of the farm villages "

TASKS OF THE CO-OPERATIVES.

" Some Ideas on Productive Undertakings of the Agricultural Co-operative Associations " are offered by Jun Kurata of the Ministry of Agriculture and Forestry in *KEIEI JITSUMU*. The wartime Agricultural Association (Nogyokai) and the Industrial Association, its predecessor, made no active contribution towards improvement of agricultural methods and production. Both these organisations assisted the farmer by handling farm products, lending money, and purchasing required necessities, but they did not seek to improve Japanese agriculture fundamentally. During the war some co-operative work and the shared use of agricultural tools were encouraged by the *Nogyokai*, but this co-operation was not of a long-range constructive nature and " was required merely to cope with the various difficulties

arising from the war situation, such as the general shortage of rural labour and the lack of cattle and farm machines. Conditions were so severe that many farmers whose sons had been called into service were forced partially to abandon their farm projects." Co-operative cooking, washing, and looking after children were also practices to some extent, "but all these activities arose only out of mutual interdependence resulting from the war situation and from the vital importance of meeting temperory agricultural needs."

Yet in these beginnings, Kurata stresses, there were potential "buds of active co-operation," and if the aim, organisation, and atmosphere are revised, they may furnish the beginnings of wide-spread co-operative activities. Because of the small size of the farm units, the land reform programme cannot be successful in itself, unless the farmers join in co-operative efforts. Co-operative endeavour is necessary for production of fodder and fertiliser, for breeding high quality seedlings, and for the fight against insect damage and for repairing destruction caused by natural calamities.

The aim, Kurata emphasises, must be the raising of agricultural productive levels. "It is not enough for the members of a co-operative organisation simply to combine their labour and their implements; they must reorganise their methods efficiently so as to improve their productive system." It is not a mere "abstract" co-operative group that is to be organised, he reiterates. It is vital "that all farm activities—from the improvement of the land to the gathering of the harvest—be examined for ways of improvement which will serve to raise production levels, and that rational operating systems be formulated."

The first impetus toward an agricultural revolution, Akira Oshima asserts in *SHINSEI NOSON*, has come from the land reform programme, which is not a result of the farmers' own efforts but originates from outside sources. "This will be carried out whether the farmer likes it or not. Further revolution which is required involves not land ownership, but farming conditions themselves" This latter "revolution," Oshima insists, must be accomplished by the agricultural co-operative associations, and its success depends on the attitude of the farmers. "The way in which the farmers and the farmers' unions autonomously organise and direct the agricultural co-operative associations is the most important question faced by the farmers' movement."

Increase of agricultural production, through co-operative farming, improvement of efficiency, and mechanisation, cannot be achieved by any law or any comprehensive system imposed from without, "but requires great efforts on the part of the farmers themselves." Farmers have long been held in ignorance and comparative bondage, Oshima

stresses, and the desire to improve their own condition must be inculcated in them through a campaign of education and enlightenment. "The agricultural co-operative association must take up this task."

TWO-FOLD FUNCTION.

Katsura Hiraki of the Ministry of Agriculture and Forestry sees the function of the agricultural co-operatives as two-fold—"to reach higher productive levels through co-operative work by the farmers, and to improve the farmers' position in society, so that they may contribute more to the national economy." Speaking at a *NORIN JIHO* round-table, Hiraki declared that the formation of agricultural co-operatives and the land reform were to be complementary programmes which "through their reciprocity should furnish the motive power toward modernisation of Japanese agriculture."

MIRACLES OF CO-OPERATION.

I will conclude this chapter with an ideal example of co-operation in occupied Japan. This is the story of Kyowa Rubber Company of Osaka one of whose directors (a worker) met me on a street car Read the story in his own words :—

In March 1945, the Tsumori Branch Factory met with complete destruction by fire in an air raid. In June of the same year, the factory of the head office was also partly destroyed in an air raid, 20 per cent of the premises being burnt down.

In October 1945, we set about the reconstruction of the war-damaged factories. In December, the rehabilitation of the head office factory was completed, and in March 1946, that of the tyre factory was also accomplished.

In January 1947, the capital of the concern was increased to 2,500,000 and facilities for the production of tyres for export purposes were newly installed

In August, the capital was further increased to 5,000,000 to cope with the requirements of the reopened foreign trade and the equipments for the manufacture of tyres, tubes and various other kinds of rubber goods for export purposes have been expanded. Thus at present the Company leads in its production of bicycle tyres, tubes, insulating tapes and rubber bands, in this country.

As the word Kyowa, meaning "co-operation" in Japanese, which has crowned the company's name ever since its inauguration, the company is conducted on the basis of complete co-operation between Capital and Labour. The entire number *of our employees,* 300 *in all, constitutes our shareholders accounting for* 80 *per cent of the company's capital. These workers are participating in the management of the company through the representatives chosen by them.*

They recognise that the reconstruction of the State and the improvement of their living condition depend upon a flourishing export industry, and this realisation enables them to make systematic efforts towards production of superior goods.

Everything in Occupied Japan is in the melting pot and so is the structure of co-operative societies. The rules and regulations (included in another chapter) may be new and changed but the spirit of co-operation is eternal and is one of the chief secrets of Japan's rapid revival soon after the war.

Read detailed information on the Activities of Agricultural Co-operative Societies in Japan in Chapter XV.

CHAPTER IX.

FINE ARTS OF JAPAN (*In Pictures*)

A CLOISONNE EXHIBITION.

BORN PAINTERS.

KASHMIR ART IN JAPAN.

FAMOUS KAMAKURA WOODWORK.

PORCELAIN PIECES.

CHINAWARE OF NAGOYA.

PEARLS FOR PRETTY ONES.

SILKS AND SATINS.

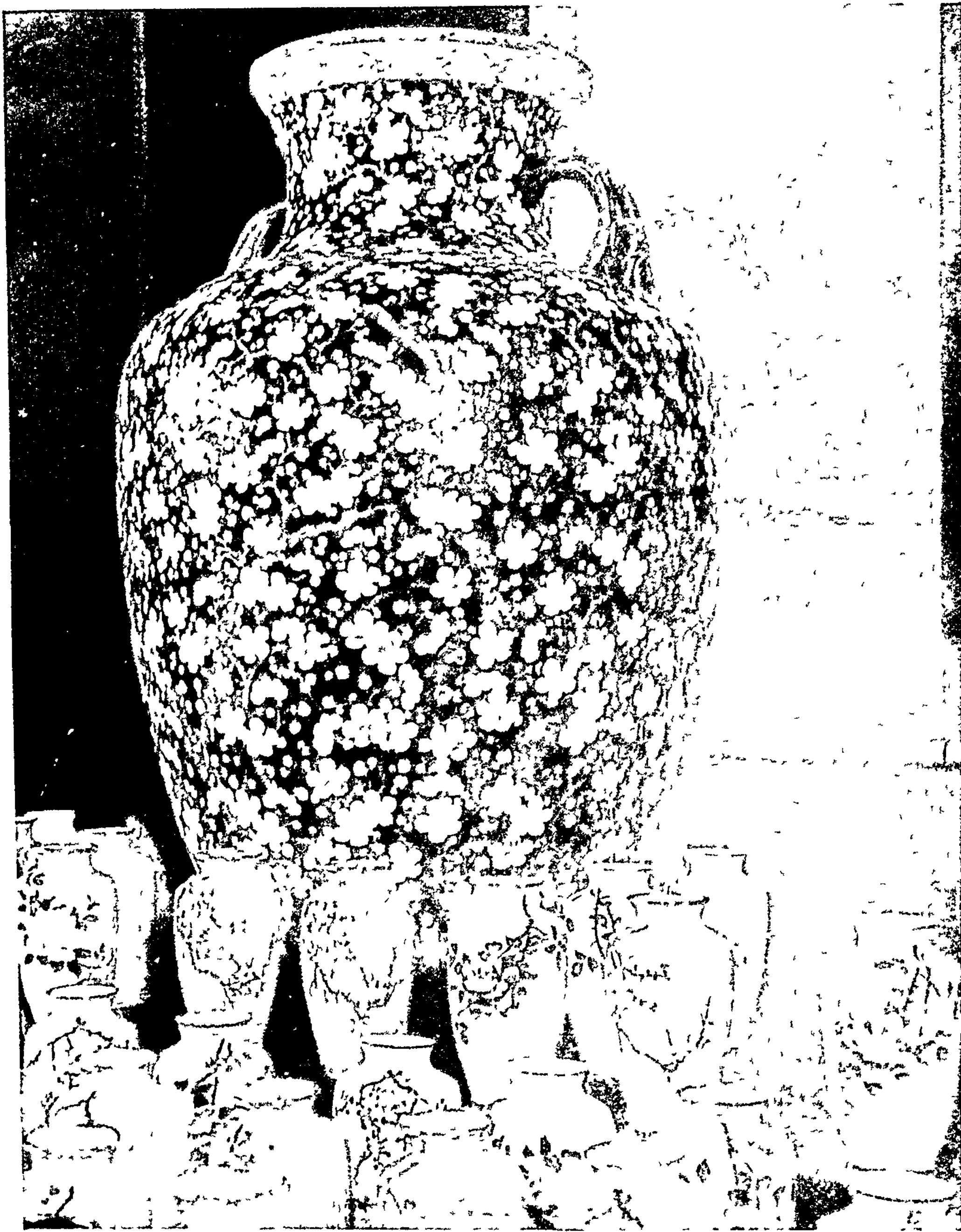
FUJI EVER INSPIRES ARTISTS.

A TYPICAL JAPANESE GARDEN.

CHARM OF LAKE HAKONE.

A VIEW OF LAKE BIWA.

BEAUTY IN BASKETWARE.



Cloisonne, Famous Product of Nagoya



Born Painters



Porcelain Pieces



Kashmir Art in Japan



Pearls for Pretty Ones

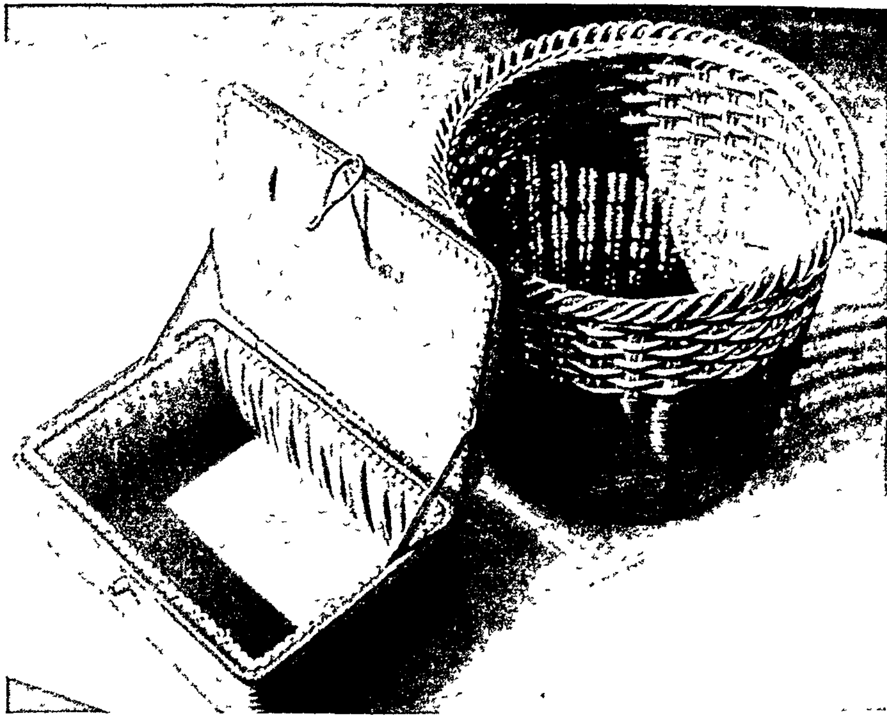


Cocoons for Silk and Satins



Fuji ever inspires Artists

Beauty in Basketware





Proud of her Harvest

CHAPTER X

INDUSTRIAL CO-OPERATIVE LAWS

CO-OPERATION EVERYWHERE.

CO-OPERATIVE INDUSTRIES.

IMPORTANT LAWS.

CONSUMER CO-OPERATIVE ASSOCIATIONS.

PRODUCERS' CO-OPERATIVE ASSOCIATIONS.

INSURANCE CO-OPERATIVE ASSOCIATIONS.

OTHER ,, ,,

FEDERATION OF ,, ,,

GENERAL PROVISIONS.

PENALTIES.

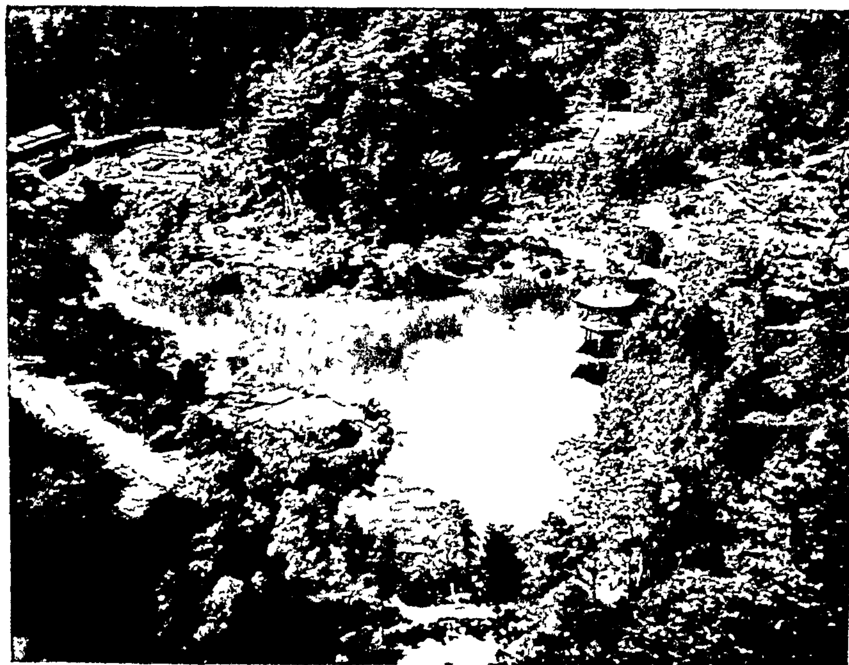
REPEALS.



A Typical Japanese Garden



A view of Lake Biwa



Charm of Lake Hakone

CHAPTER X

INDUSTRIAL CO-OPERATIVE LAWS

Japan, as I have stated in the previous chapter, is a family of co-operators. Co-operation is practised in farms and factories, at religious gatherings, on the streets and, in fact, in every walk of life. Japan's rapid industrial progress is based on many factors, but credit must go to the Government of Japan for the industrial co-operation laws promulgated from time to time. For every sphere of public activity there is a co-operative society and a law to support it. Co-operative societies are a kind of Government in Japan which regulate both agriculture and industries. The following laws, which were recently promulgated in Japan for the furtherance of co-operative enterprise, may be of some help to our provinces now busy organising industries on a co-operative basis.

THE CO-OPERATIVE ENTERPRISE LAW

June 19th, 1948

ARTICLE 1 PURPOSE

This law defines and provides for the organisation of co-operative associations and federations of co-operative associations, outlines permitted activities of each type, provides rules for their operations, and provides for registration with the Fair Trade Commission of all co-operative enterprises

ARTICLE 2 DEFINITION.

A co-operative association also referred to as a co-operative enterprise or a co-operative within the meaning of this law shall be a juridical person ·

(*a*) Which is organised for and conducts its business primarily for the mutual help and benefit of its members ;

(*b*) Of which each *member* shall be a shareholder and shall *have* not more than *one vote* in the business of the association regardless of the number of shares owned ; and

(c) The *earnings* and savings of which are *distributed*, whether in the form of cash stock or evidences of indebtedness or in services, *proportionately* and equitably among its members upon the basis of the amount of sales, purchases or other services rendered to or by such members, except for fixed dividends, which shall be stated in the articles of incorporation, which may be paid on the capital stock, and necessary reserves.

ARTICLE 3. ORGANISATION.

Articles 165 to 456 inclusive, and Articles 486 to 500 inclusive, of the Commercial Code of Japan shall apply to the organisation, registration, operation, reorganisation, dissolution and liquidation of co-operative associations organised under this law *mutatis mutandis*, with the following exceptions:

(a) The promoter shall prepare in advance a programme for the scope of business, area of operation and requirements for membership, as proposed by them, and hold a *preliminary meeting* for organisation, giving public notice of said meeting, the time and place and above mentioned proposals Such notice shall be given by adequate means publicly, at least two weeks in advance of the day of meeting

(b) At the preliminary organisation meeting, seven or more drafters of the Articles of Association shall be selected from among those present who are eligible for membership as proposed. They shall decide the matters necessary for formulation of the Articles of Association.

(c) The trade name of a co-operative enterprise, association, or company shall include words denoting the type of co-operative it is, the name of the locality in which it operates, and the word "Co-operative." No person or firm other than the one organised or operating under the authority of this law, or of the Agricultural Co-operative Association Law, may use the word "Co-operative" or any abbreviation thereof or derivation therefrom in its name.

(d) Shares of a co-operative enterprise may not be transferred, but may be redeemed.

(e) Any natural person engaged in the same line of endeavour or activity or desiring the services for which a co-operative was or is to be formed, provided it is in the area in which he resides or does business, may become a member thereof, and no applicant shall be refused membership because of race, creed, colour, sex, or political beliefs, nor may special conditions not imposed upon other members be attached to any application. Membership shall not be compulsory, and members may resign any time after giving adequate notice All members shall have equal voting rights regardless of stock-holdings or financial interest, or Article 241 Commercial Code, but no member

may vote more than one proxy. Voting may be by proxy only on previously publicised issues All proxies shall be in writing No member may be expelled except by a majority vote of the members at a regular meeting after notice of such proposed action given him prior to the day of meeting Expulsion may be for any of the following reasons.

1. Continued refusal to comply with his obligations or payments
2. Violation of the rules of membership.

No juridical person may be a member of a co-operative enterprise as defined by this law except as provided in Article 6 hereof for Federations.

(*f*) Adequate provisions for voting by mail may be made by each co-operative.

(*g*) No shareholder shall own or control in excess of 25 per cent of the outstanding shares

(*h*) Co-operative enterprises need not obtain subscription for entire amount of capital stock authorised before requiring payment, calling a constituent general meeting, or before registration Stock may be sold at any time up to the amount authorised and may be called in without changing its Articles of Association or incorporation, or its registration. All capital stock must be fully paid up when issued or within a period prescribed in the articles or by-laws not to exceed 90 days

(*i*) No director may serve as an officer or director in a competing organisation or an organisation which rents, buys from, or sells to the association of which he is a director, nor may a director serve as a director or officer of more than three other juridical persons at the same time except in the case of non-profit organisation

(*j*) Surplus and savings of co-operative enterprises after adequate provision for reserves and expenses, shall be distributed as outlined in Article 2 of this law

ARTICLE 4 FILING WITH FAIR TRADE COMMISSION.

Every co-operative enterprise established after the effective date of this law shall, within thirty (30) days thereof, file with the Fair Trade Commission copies of its Articles of Association or agreement, by-laws, and names of its officers

ARTICLE 5 PERMITTED ACTIVITIES OF CO-OPERATIVE ENTERPRISES.

Each of the following types of co-operative associations is permitted to engage in and is limited to the functions indicated herein

or functions necessarily related thereto, including the dissemination of information and education material concerning co-operatives and their operation, respectively :

(a) *Consumers' Co-operative Associations.* These associations may act for their members or patrons, or any of them as limited by the definition in Article 2 hereof, performing for them services connected with the purchase, manufacture, preservation, drying, canning, storing, handling, retailing and utilisation of agricultural, dairy, or other food products, family or other household supplies to be consumed by the families or patrons of the association, but not for resale by them. Such associations may carry on co-operatively any other household operation ; or perform services connected with the purchase or hiring for, or use by it of supplies, machinery and equipment, and the hiring of labour ; and may perform any one or more of the kinds of service specified in this section. Business conducted for non-members shall not exceed 20 per cent of the total business done.

(b) *Producers' Co-operative Associations.* These associations in their Articles shall restrict membership to enterprises in businesses or activities having common production characteristics. They may also provide for associate (non-voting) membership for natural persons not otherwise eligible for membership but who may require the association's services Producers' Co-operatives may conduct producing, manufacturing, warehousing, processing and cleansing business, or the sale of their product on the co-operative plan for its members and patrons as limited by the definition in Article 2 hereof, in articles of common use. Business conducted for non-members shall not exceed 20 per cent of the total business conducted.

(c) *Credit Co-operative Associations.* These associations may conduct a general credit business as limited by the definition of Article 2 hereof, including the receipt of deposits, making loans and discounting bills for members and patrons, purchasing national or local bonds and other securities approved by the Minister of Finance for all banks ; depositing money with banks, trust companies and postal saving Deposits or loans of non-members shall not exceed 20 per cent of all deposits held or loans outstanding. No credit co-operative association may engage in any other co-operative function.

(d) *Insurance Co-operative Associations.* These associations may conduct general insurance business, except life insurance, as limited by the definition in Article 2 hereof, for the purpose of spreading the risks of members. No insurance co-operative may engage in any other co-operative function. Insurance business with non-member individuals or enterprises shall not exceed 20 per cent of the total outstanding volume of business

(*e*) *Other Co-operative Associations.* A co-operative association may be authorised by the Fair Trade Commission to perform functions not specified in Article 5*a* to *d*, except that there may be no authorisation under this law for associations of enterprises engaged primarily in retailing or wholesaling. Any organisation so authorised by the Fair Trade Commission shall be subject to all provisions of this law.

ARTICLE 6 · FEDERATIONS OF CO-OPERATIVE ASSOCIATIONS.

Two or more of the same type or co-operative associations organised and operating under the authority of this law may organise federations of co-operative associations and may use the word " Co-operative " in the name of the Federation.

Such federations shall be organised in accordance with and shall be subject to all provisions of the Trade Association Law, but may not engage in the operating functions of individual co-operatives, except those authorised for Trade Associations.

ARTICLE 7 : EXISTING CO-OPERATIVE ASSOCIATIONS

All co-operative enterprises not specifically excluded from the provisions of this law, existing at the time this law becomes effective must amend their articles of association, and by-laws, and reorganise to conform to this law; and all existing co-operative enterprises must file copies of their articles of association and by-laws, together with the names of officers and a statement identifying the provisions of the particular law and/or laws, if any, pursuant to which they were created, with the Fair Trade Commission within 90 days after the effective date of this law, or be dissolved.

ARTICLE 8 : EXEMPTED ORGANISATIONS.

The provisions of this law (except Article 4) shall not apply to any organisation established under the provisions of the following laws ·

(*a*) The Agricultural Co-operative Association Law (Kogyo Kyodo Kumial Ho)

(*b*) The Fisheries Organisation Law (Suisangyo Dantal Ho).

(*c*) The Forest Industries Association Law No. 35 (Ringyo Kai Ho)

(*d*) The Forest Law No. 43 (Shinrin Ho).

ARTICLE 9 · GENERAL PROVISIONS.

All co-operative enterprises organised or operating under the authority of this law are required to :

(*a*) Comply with all applicable laws and regulations relating to the functions performed by that type of organisation.

(b) Submit financial and operating reports to members at regular frequent intervals and make available to members financial data of the co-operative during regular working hours on reasonable requests.

(c) Refrain from monopolising or restraining trade to such an extent that prices are unduly enhanced, or from the use of unfair methods of competition as stated in Article 24 of the Law Relating Prohibition of Private Monopoly and Methods of Preserving Fair Trade, Law No 54 of 1947.

ARTICLE 10 : TAX EXEMPTIONS.

Co-operative enterprises operating under the law shall not pay income taxes on income distributed to members.

Liquidation taxes shall not be assessed against juridical organisations which revert to individual proprietorships within three (3) months after this law becomes effective for the purpose of retaining membership in a co-operative association organised and operating under its authority, nor shall the individuals who receive the assets of such liquidated juridical persons be assessed acquisition taxes upon receipt of such assets if they were the original owners thereof.

ARTICLE 11 · PENALTIES.

It shall be unlawful for any enterprise formed under the provisions of this law to carry on business contrary to or outside of the purpose for which it is formed Any person or enterprise violating any of the provisions of this law shall be liable to a fine of not more than five thousand yen (yen 5,000) or imprisonment for not more than five (5) years.

ARTICLE 12 · REPEALS.

The Commercial and Industrial Co-operative Union Law (Law No. 51 of 1946) is repealed as of the date this law becomes effective, except as to the penal provisions, which shall continue in force for five (5) years.

ARTICLE 13 : EFFECTIVE DATE.

This law shall become effective within thirty (30) days after its passage and promulgation.

CHAPTER XI

SAVIOURS OF JAPAN

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A Textile Worker



A Pilot



A Bus Conductor



Heroines of War of Equality



Women in Parliament



Raising Silkworms



A busy Basketmaker



Silk Loom for Home-Weaving



Wealth of the Ocean

CHAPTER XI

SAVIOURS OF JAPAN

Women are the main driving force of Japan's industrial revolution so far as labour is concerned.

DR. JAMES A.B. SCHERER.

* * * *

The Japanese woman is the hardest worked and the most enslaved of any female proletariat. She is employed in engineering shops, raises heavy weights, drags handbarrows, staffs the hotels, serves in the shops, is an agricultural labourer, millhand, on occasion coals the ship and is used for every kind of heavy and arduous toil Her wages are handled by her father, her husband or her son.[1]

MRS. CECIL CHESTERTON.

More than 20 million female hands (ten million women) are working for the rapid recovery of Japan's national economy.

In no other country in the world you can find so hardworking, self-sacrificing and yet uncomplaining and eversmiling women as you meet in Japan. I adore their spirit of sacrifice and admire and envy their cheerfulness They produce 80 per cent of those fine textiles that people in India and other countries love to buy. They serve the whole nation in hotels, restaurants, cafes, cinemas, theatres, geisha houses, department stores, buses, tramways, and at every place they greet you with a smile and say " arigato " (thanks) before you leave the place.

Whenever and wherever I come across a Japanese woman in her true oriental culture, I bow to her in respect, and I think of the ancient Indian ideal of womanhood. I find no difference in the

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[1] It is not true in all cases, and I make this statement on the basis of personal inquiry Women are perfectly free today and all girls have been made free

general appearance, behaviour, politeness, sweetness and motherly affection of a Japanese and an Indian woman. And why should there be any difference when the source of culture is the same?

Embodiment Of Sacrifice.

An Oriental woman is the very embodiment of sacrifice, piety and nobility, while women in the West (of course with exceptions) are trained to think only in terms of gold and individual gain.

While the woman in the Orient virtually rules over her children and wields tremendous influence over them, the woman in the West is generally a companion at will. Hence with the fundamental difference of outlook on life, they cannot easily be understood by each other. In Japan women do not know what is individualism. They live and earn for the family and they die for it when need be. Their love for their children, their respect towards parents and devotion to husbands are admirable

The Japanese ideal of the woman's life is exactly the same as ordained by Manu, the Hindu law giver.

Ideals Not Wrong

It is true that women in some Oriental countries are not generally granted equal rights and in several cases injustice is done to them by selfish and ignorant husbands, but this does not mean that the ancient ideals are wrong.

The history of India and Japan shows that women had equal rights with men from ancient times. They were not only scholars, philosophers, poets, artists and warriors, but also ably ruled their countries for decades.

A Few Examples.

Who in India does not know the names of Maharani Holkar, the Rani of Jhansi, Nurjehan and Razia Begum Indian history has many stories of brave warrior women of different parts of the country. Space does not allow any detailed mention of such brave and noble daughters of India.

Similarly, Japan too accorded a very high place to women in ancient days There were many Empresses of Japan. Empress Jingo, according to Japanese history, led armies to conquer Korea. History records ten officially recognised Empresses of Japan, but since 1889 law has prohibited women from ascending the Throne

Of the eight rulers of the brilliant Nara period four were women, one of whom, Empress Koken, ruled with a stern hand. In ancient days men and women were almost equally educated and stood on terms of perfect social equality both in India and in Japan but the situation in both countries deteriorated. Manu, the Hindu law giver,

said " Paradise is the home where women are honoured and happy ". Time is not far off when India and Japan will follow this ideal.

SUBJUGATION OF WOMEN

The subjugation of women was a feature of the reign of Confucianism emphasised by the first Tokugawa Shogun, Iyeyasu. Its leading exponent was Kaibara Ekken, whose Greater Learning for Women taught that " a woman should look on her husband as if he were heaven itself, and never weary of thinking how she may yield to her husband, and thus escape celestial castigation."

Among " seven reasons for divorce " this worthy included " disobedience to father-in-law, failure to bear children, jealousy, and talking overmuch or prattling ".

GOOD DAYS FOR WOMEN.

When the Tokugawa yoke was thrown off and the Meiji period ushered in, one of the most noteworthy acts of the young Emperor was the Rescript of 1871, which among other startling innovations emphasised the desirability of wives, daughters, and sisters accompanying the nobles who went abroad, so that they may " see for themselves how, in the lands they visit, women receive their education ". This Rescript has now been removed from the code of education in Japan as undemocratic.

Enlightened and far-reaching was the Imperial patronage accorded to five little "ambassadors"—Japanese girls sent over to America in 1871—to grow up in American ways and bring back whatever good they might find to the rising generation of Japanese women. " Before leaving home they were summoned to Tokyo, and in testimony of the goodwill of the Mikado, and according to an ancient custom, they were each presented, by the attendants at the Court, with beautiful specimens of crimson crepe, and an order was issued that their expenses while in America should be paid by the Government".

Ume Tsuda, youngest of the group—only seven—ultimately founded in Tokyo the women's college of English that has done so much for Japanese womanhood. Surely an " enlightened government " never proved its title better than by acts like these.

But it took a long time even to begin to undo the two and a half centuries of Tokugawa oppression. Not until twenty years after the Restoration were the personal rights of women recognised in the national statutes. By the revision of the Civil Law in 1898 polygamy was made illegal. To force woman to marry against her will was also forbidden Women over the age of twenty-five were given the right to marry men of their own choice, even without the consent of the head of the family. Women were allowed to possess property of their own. Married women, with the permission of their husbands, were

allowed to engage in business of their own. These were the main points in the new law by which women were accorded rights which, though still less than those of their men-folk, had hitherto been withheld altogether.

ENJOY EQUAL RIGHTS.

Ten years later the first women's organisation was formed, the Women's Patriotic Association, which once had a membership of nearly a million. By 1919 such organisations had become so numerous that their federation now represents several million members. This originated with the Blue Stocking Club (Seitosha), which soon lost public sympathy through imprudent conduct, and was disbanded. The New Women's Society (Shinfujin Kyokai), organised in 1920, was a serious group of politically-minded women with a lasting influence. Although it disappeared as such, from it sprang five new bodies, whose fine service in the great earthquake of 1923 did more for feminism than everything else put together. " Women of Tokyo of all shades were united in a common cause, and they realised that they were handicapped at all turns on account of their lack of political rights. In the next year the Women's Suffrage League was formed, and by means of lectures, distribution of pamphlets, and wide circulation of a large number of women's magazines, the aims and objects of those working for feminine rights were made known to an ever increasing number of women throughout the country." Today, thanks to General MacArthur, women enjoy equal rights with men and more than a dozen women are in Parliament (See picture).

CHANGING WOMEN OF JAPAN.

Of the revolutionary changes of the mode of life that have occurred since the great earthquake and fire in Tokyo, the most remarkable are those in women's dress and deportment. Compared with the sudden changes in the mode of life of Japanese women in the past ten years, those of Japanese men have been slow.

In the photographs carried home by foreigners as materials for the study of the manners and customs of Japanese women from the end of the Tokugawa Shogunate to about 1905, or the Russo-Japanese War period, every woman, irrespective of her social class or occupation, appears with her hands concealed in her sleeves. This appears to have been a set pose then. But this pose was not assumed in front of the camera alone. When they walked along the road, they used to keep their hands as much out of sight as possible. The Japanese woman's feeling of shame to have her hands exposed was, of course, due to the lingering of feudal morals which forbade her working out of doors like men and declared it to be the most refined virtue of a woman not to look like a manual worker but to devote herself

to the management of household affairs, to the education of her children and to the assistance of her husband.

After the Russo-Japanese War, as Japan grew into an industrial country by leaps and bounds, however, Japanese women, in spite of such training, came to find it no longer bearable to wrap their hands in their sleeves. Generally speaking, every social change develops far ahead of law and morals, and not until the last moment does the latter surrender to the former. So long as Japan was a country of raw materials and manual labour, she was surely a dream land of the East The preparations for making Japan into an industrial country were started in the year 1894 which saw the revision of treaties, and were completed in 1905 when the Russo-Japanese War was fought. In other words, the Russo-Japanese War became an occasion for Japan to start on an industrial career at a tremendous speed.

With the industrialisation of Japan, there arose in every labour market a demand for the hands of women For, of course, women's hands were cheap and pliant Mechanised factories no longer required the expensive and strong hands of men.

It goes without saying that the hands of women thus required at first by the labour market were not those of the daughters of rich families But society is an organism, and if a great change takes place in a part of it, it never fails, sooner or later, to affect the whole. The fact that the girls of the lower classes came to be in good demand in the labour market soon began to work an extremely delicate, but very significant change in the daily life of the daughters of the upper classes.

From the last years of the Meiji Era to the beginning of the Taisho, there developed a great desire for reading among women, and many magazines for women, with circulations of hundreds of thousands appeared. As a rule, the first pages of these magazines were filled with photographs of pretty women of good families. Some of them went so far as to specialise in publishing these portraits.

On looking at the manners of these ladies and daughters through the photogravures inserted in the first pages of these magazines, our eyes are caught first of all by the fact that they are holding both their hands out quite freely In those days, foreign style clothes were not so popular as today. As for hair dressing, too, despite a certain vogue of general foreign styles, there were no waves or bobs to be seen, although I fear even in Western countries, these coiffures may have come into fashion quite recently. They wore old-fashioned garments with long sleeves and printed skirts, but both their hands were laid bare without the slightest reserve This is an interesting fact that symbolises the changes in the mode of life of Japanese women.

Today there are women directors of hospitals, women officials, professors, judges and lawyers, in fact every profession is open to women. The ideology of the principle of "good wives and wise mothers" has at last had to be qualified by social and economical factors.

Until the last year of the Meiji Era when the principle of "good wives and wise mothers" was still strictly observed, severe restrictions were put upon book reading and bodily exercises for women. Women were to select and read such books as were suited peculiarly to women. For women to make their learning publicly known, to take part in debates or exchange views with men were considered incompatible with their position as "good wives and wise mothers". Restrictions which now appear quite unbelievable were then imposed on the women of Japan. For a woman to read books or newspapers in trams or trains was considered a disgustingly impertinent act. In those days, when a woman of the middle or lower classes embarked upon a working career, her job was to be such as to be suitable for women, as far as possible. Jobs that might deprive women of their gracefulness and gentleness had to be avoided. Work which might affect adversely the mission of the fair sex in life —maternity— was not to be assigned to women These views were voiced rather extensively by the so-called intelligentsia of those days.

On the other hand, however, as the policy of physical education in girls' schools and other institutions was altered year after year and the old restrictions put upon the bodily exercises and games for women were removed one by one, the physique of Japanese women improved at a marvellous rate Now that the physical constitution of women had improved so rapidly, it became impossible to judge their ability by the old standards, and so there remained little distinction between the working scope of women and men, as is the case today.

GREAT WAR HELPS.

It may not be necessary to illustrate in detail what remarkable influence was exerted, spiritually and materially, upon the civilisation of Japan by the measures taken by the European Powers when they were involved in the malestrom of 1914. As the Great War went on, the Japanese nation was moved deeply and intensely by the emergency measures adopted by the European Powers The dangers arising out of their conservative outlook on national life became more and more clear to the Japanese The nation was profoundly impressed with the idea of "mobilising the whole nation" Except for its experiences at the time of the Sino-Japanese and the Russo-Japanese Wars, Japan had no great experience of national crises. The Japanese nation firmly believed that an efficient standing army supported by the patriotism of the whole nation was enough for any country to defy foreign invasion and retain its independence However, the state of affairs

that developed in the belligerent countries during World War I taught Japan more eloquently than anything else that her ideas should be fundamentally revised.

It became crystal clear to the Japanese that in national emergencies mere mobilisation of a portion of the nation alone will not avail much. National security needed the close co-operation and active participation of all, both men and women.

GOVERNMENT'S POLICY CHANGED.

And so sometime between the fifth and seventh years of Taisho, *i.e.* 1916 to 1918—a radical reform was effected in the administrative policy of government offices, which a writer calls " the silent revolution of Taisho." Of the items of this " silent revolution," the most remarkable were the establishment of social administration and the drastic reform of female education, particularly in its physical educational aspect. According to the Asahi there had been no social administration in the strict sense of the words in Japan until then. The authorities had treated social politics, socialism and communism alike as " dangerous ideas." Even after the outbreak of the Great War, they did not cease to regard a general election as a " dangerous idea " It was between 1916 and 1918 that what seemed like a social administration was initiated in Japan.

The object lesson of the Great War, even the die-hards could not help learning. And they realised that in case of future national emergency, when there arose the necessity to mobilise the whole nation, women should share with men the responsibility for discharging whatever duties that might fall on them according to the mobilisation plan. Of course there existed the slogan of " the unanimity of the whole Empire," and not seldom women too had taken part in exceptional duties in times of war, such as serving in garrison hospitals as nurses, assisting in sending out munitions or aiding the families of soldiers at the front, but those had been services so graceful and gentle that they strictly remained within the limits of the specific character and capacity of the gentler sex. It was a role quite beyond the old pale of " womanly " characteristics that the Japanese women were called upon to play under the new national mobilisation plan drawn up in accordance with the object lesson of the Great War.

Thus the fundamental policy of female education in Japan was tacitly altered, facts having completely beaten arguments of right or wrong. It must not however be overlooked, that the circumstances in which increasing numbers of young women locked out of matrimony were crowding to the labour front year after year, went some length in bringing about the change. And those educational restrictions of " women within the limits of womanliness," which still existed in matters of physical as well as mental training in this country from the

end of the Meiji Era into the earlier days of Taisho, were silently removed.

EARTHQUAKE THE TURNING POINT[1].

The real turning point in the lives of the women of Nippon was the great earthquake of 1923. Following this national catastrophe which necessitated the adoption of a new mode of living, many girls and women began entering business and commercial offices heretofore closed to them They were mobilised in the national emergency, for every available adult man or woman was needed in the gigantic task of reconstructing the vast devastated areas.

Just as the World War gave the women of America and Europe an opportunity to enter the men's sphere of business and industry, so the earthquake of 1923 in Japan afforded the women and girls of the land of demure kimono-clad women, whose place until then was strictly in the home, an opportunity to penetrate into their husbands' and brothers' domain.

Upon taking positions in offices the Japanese women soon discovered that it was too expensive to wear their elaborate and costly kimonos in the battered, quake-shaken temporary business offices. Many women and girls, consequently, adopted the more practical European mode of attire, and with this apparel came, naturally, coating of imported facial cream, a dab of rouge and lipstick and the clipping, in some instances, of tresses.

What was more important, the women liked their new surroundings. Once established in offices, they have been averse to surrendering their newly acquired " rights."

Such in brief is the history of a silent revolution among the daughters of Japan.

CRAZE FOR MODERNISM.

The fair sex in Japan is caught neck deep in the tide of craze for modernism Lipstick, rouge and bobbed hair—current fashions in the West—are rapidly making headway in Japan and I wonder why the Japanese have gone mad after the craze for Westernism. But I have faith in the wisdom and foresight of the right-thinking men of Japan.

NO CAUSE FOR ALARM.

The people of Japan have a great reputation for making the best use of everything foreign and though outwardly they seem to be Westernized, they are in spirit 100 per cent Japanese. In their offices they use foreign dress, but at home every person from the Prime

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N. C. Herald.

Minister to the labourer uses his kimono, the national dress of Japan, and hence there is no cause for alarm that Japan will ever become completely Westernized.

As one who does not like too much Westernization, I am glad to note the deep love among the Japanese women for Japanese dress and manners, inspite of their using Western dresses.

There are, for instance, women leaders who appear before large audiences in the most grotesque foreign apparel although their wardrobes may be filled with gorgeous kimonos. There are daughters of the rich and near-rich who would look far better in their charming national costume than they do in ill-cut Western garbs.

TIDE OF WESTERNISM.

If one were to visit Tokyo today one would be astonished during even so brief a stay as a week to perceive the constantly increasing number of girls and young women who are casting aside their traditional customs for Western ways of living. The increase in the number of girls who are, for instance, discarding their native dresses and appearing in foreign costumes is so noticeable at present that few visitors have failed to observe and comment on this phase of changing Japan.

What is more important, the change that is taking place is not confined to outward aspects alone. Fundamental and thoroughgoing changes are taking place in the minds of Nippon's young women and girls though this naturally may not be apparent to any newcomers to the country.

On the Ginza in Tokyo, which corresponds to Chandni Chauk in Delhi, on any fair day or evening, one will note that more than half the number of girls are attired at present in European dresses, whereas a few years ago hardly more than one in ten dared to venture out in such attire for fear of being dubbed a brazen modernist. Scarcity of cloth due to war has added to the speed of Westernization and I found very few kimonos on the Ginza this year. With the return of prosperity the Japanese dress will regain its position, I have no doubts.

POPULAR GIRLS.

"Moga" (Japanese term for modern girl) is fast becoming popular in the cities of Japan. The men of Japan are no longer charmed by the once-popular type of quaint oblong faces to be seen in the old Japanese colour prints. The type of Japanese girls who is popular today should have eyes that do not resemble almonds, who does her hair according to the accredited Hollywood fashion and who uses rouge, rather than those who paint their faces deathly white and wear strange, picturesque headgear as was the custom in Japan in centuries past.

Before the Occupation there were so few American and European girls and women in Japan that the ordinary Japanese girl modelled herself mainly after American screen types. Joan Crawford, Constance Bennett, Kay Francis and Carole Lombard were the favourite patterns of Japan's flappers.

It may seem strange, but it is true that imitating the posture, the movements, especially the gait of their favourite stars, are among the most important ways in which a Japanese girl, brought up in clattering wooden cogs, manages to acquire the proper walking habit of the Western woman. Now Tokyo is full of glamour girls from America and Japanese girls are aping them.[1]

MEANING OF LOVE.

But affecting a comely gait is not the only thing the girls of Japan are learning from American motion pictures and American girls. They have, for instance, learned the Western meaning of love Kissing is becoming popular among the youth. The consequence has been disastrous, at least to the parents of the girls. For most mothers and fathers in the land of Madame Butterfly still adhere to the ancient notion that marriages should be arranged not by the principals, but by sedate outsiders with balanced ideas of the merits and demerits of the respective parties.

So widespread, however, has the influence exerted by the West been on the life of the people of Japan that the protests of the older people are being brushed aside with great abandon and new customs adopted literally overnight.

BENEFITS OF WESTERNISM.

Several Japanese thinkers believe that the Westernization of the Japanese women has been to the nation's benefit. Since doffing the kimono and donning the Western dresses their physique has improved considerably. The kimono restricted movement and stunted the physical development of the girls.

Now that the kimono is being discarded for the Western attire which affords freer movement, the girls are able to participate in strenuous athletic exercises and games which serve to develop their physique.

EVOLVING NEW TYPE.

The modern girls of Japan are evolving a type of Oriental charm that cannot be branded as a simple and direct imitation. And it is for this reason that judges of the beauty contests in Tokyo are confident that the prize winners in Japan can be favourably

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An American General told me that he liked to see Japanese women in their national dress which suits them far better than Western clothes meant for taller women of the west.

compared with those of other countries. They will not be a mere Westernized example of Oriental beauty, but a harmonised product with the best features of the two hemispheres brought together. No wonder some high American officers stationed in Japan prefer to have modern Japanese girls as their secretaries despite heart-burning among the American girls proud of their charms.

" WESTERNISM IS CHEAPER "

In Tokyo bobbed hair is becoming common, and most of the shop assistants, typists and working girls are abandoning the kimono for the Western dress. The idea underlying, as stated by promoters of Westernism in Japan, is that the Japanese custom is utterly impracticable for city life and is far dearer than the modern dress. (Kyoto —the ancient capital—still preserves the ancient dress and manners too).

A woman needs a number of kimonos—the pattern varies little each season of the year—and apart from the obi, or sash, each outfit calls for so many accessories that quite a cheap costume costs much more than Western clothes. Today it is an economic necessity to fashion woman's clothes after the Western model.

A GAIN IN HEIGHT.

Investigations conducted by the Ministry of Home Affairs reveal the startling fact that girls between fourteen and nineteen years of age today have gained an average in height between an inch and an inch and one-fifth over those of a generation ago.

It is, of course, between these ages that the girls go in mostly for outdoor sports and, as evidence of the great advance that has been made in Japan of recent years in athletics, mention might be made that Japanese girls are now competing in international athletic contests

Probably the greatest transformation in the outward appearance of the girls of Nippon has been in their coiffure. This is due to the fact that the Japanese mode of hairdressing is the direct opposite in all particulars to that of America and Europe.

For instance, the first requisite in Western coiffure is to have the hair in curls and waves which is an abomination in Japanese hairdressing. A lock or two hanging gracefully over the cheek in a ring is regarded as a sign of beauty in the West, but is decidedly intolerable in Japan.

Again, golden tresses are an incomparable treasure in Western hairdressing, while anything but glossy raven-black hair is objectionable to the old type of Japanese coiffure. Oil is used lavishly in the setting of Japanese coiffure, while in the West as little oil as possible is employed.

The disappearance of the old form of hairdressing, therefore, has brought about a startling change in the appearance of the Japanese girl and has, in fact, even made it necessary to alter the standard of

her beauty. With the olden type of coiffure a long, narrow face was essential. With the Western form of hairdressing the more roundish type of face is ideal.

However, London, Hollywood and Paris fashions in coiffure must be considerably remodelled before they can be made to harmonise with the general appearance of the Japanese girl. This is also true of other adaptations.

MODERNS GIRLS.

No street scene is more impressive to the thoughtful observer today than one of these "moga" ("modern girl") walking, alongside her mother As Dr. Faust says, "The old idea that grace is found in weakness is being driven out of Japan. Japan knows that if she desires to have strong sons she must first have strong mothers." She is getting them, and that without loss of charm. Skiing is immensely popular in "the Japanese Alps." Young women go in for all sorts of competitive sports. Miss Kinue Hitomi will be remembered as a great runner in the last Olympics, who later sacrificed her life through over-exertion at Prague. Girls even race motorcars, pilot aeroplanes, and descend from the sky in parachutes. And modern geisha plays baseball!

Mr. Uenoda, in his delightful little book "Japan and Jazz," has good words for the "moga". He says :—

> "In former days a girl ate little, talked blushingly, and rarely laughed in the presence of strangers for fear she might be regarded as unwomanly. In those days a girl with a long face known as urizane-ago, (resembling the shape of a melon seed) and a small mouth was considered the finest type of feminine beauty. Such facial beauty nowadays has no market. It is the interesting face lighted with sparkling intelligence that has begun to appeal. Today the city girl talks heartily, eats enormously, and laughs merrily The long-faced and small-mouthed solemn beauty of the mid Meiji Era has died of starvation.
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> "Who is this 'moga' and what is she, gaining so much notoriety in newspaper columns and social gossip? To say that the modern girl is a kind of girl who will do anything she pleases is too sweeping a statement. Bobbed hair and foreign dress are only part of the modern girl. That the modern girl is a vamp is a fable. She is neither a man-killer nor a man-eater.
>
> "As a matter of fact, the modern Japanese girl is a timid creature, almost as timid as any other girl. The allegation that she is bold and challenging to man is an exaggeration. It must be remembered that respectability in the feudal sense of the word still counts for everything in Japan, where the family is the unit of national life. The respectability of one's family and its members

is of prime importance. In America, a girl of working age may find an advertisement in the 'ad' page, and off she goes to apply for it. In a few hours she returns home having obtained what she wanted, and begins work the next day. This is hardly the case in this country. In order to get even the meanest job a girl is required to submit her personal history. To keep a good name for herself and her family is one of her greatest concerns."

SUPREME SACRIFICE.

What interests me more in the women of Japan is their spirit of sacrifice. I dare say that Japan's industrial success owes more than fifty per cent to the sacrifice of its sacrificing daughters. In India, a daughter is, in some places, regarded as a burden, but in Japan everywhere she is a blessing to her parents. Their spirit of love for parents is wonderfully noble. Every year hundreds of girls used to sell themselves to feed their starving parents, who were victims of poor economic conditions in agriculture Now the practice has been abolished by law. Girls are the saviours of Japan. Take, for instance, the industries of Japan.

INDUSTRIES THRIVE ON THEM.

According to the latest official figures, in the spinning and weaving industry alone women furnish 82.4 per cent of the "man power", the number of female operatives being 740,511 as against only 158,281 males In miscellaneous industries they furnish 54.3 per cent. Although men outnumber women in lumber, machinery, chemicals, foods, ceramics, printing and book-binding, gas and electric works and the metal industries, yet when the grand totals are taken women and girls are still in the lead, numbering 886,234 workers as against 774,098 or 63.4 per cent.

If now we broaden the scope of this inquiry so as to include all gainful occupations, it appears that out of the 29,000,000 women in Japan proper 9,930,000 are wage-earners, more than half the total number of wage-earners. In late years they have steadily moved upward from exclusively "women industries" into the metallic and mechanical fields. They have also shown a tendency to rise from physical work to mental. In 1931 there were 3,986 women physicians and pharmacists, 154,153 nurses and midwives. In other groups the latest available figures are for 1928, when there were 96,081 women teachers; 46,737 "communications" employees, including, of course, telephone girls; and 9,452 railway helpers. Typists and shopgirls are legion. On 17,000 women workers in Tokyo, 76 57 per cent contribute to the support of their families, besides earning their own living. The majority of these are from sixteen to twenty-five years old, and earn an average monthly wage of 30 yen. On this they can live and save a little.

TEN MILLION WOMEN WORKERS.

Before the present war more than ten million women (10,130,000) workers were employed in Japan.

The division of work was as follows :

On farms	5,690,000
Servants	719,000
Workers in cotton mills	479,000
Women in business	417,000
Workers in hotels and restaurants (Waitresses, barmaids and geisha-girls)	323,000
Workers in cocoonery and filature ..	216,000
Teaching profession	106,000
Medical profession (Doctors, nurses, etc.)	62,000
Workers in communication (Telephone girls, etc)	51,000

WOMEN RUN TEXTILE FACTORIES

NUMBER OF FACTORIES AND OPERATIVES IN THE JAPANESE COTTON SPINNING AND WEAVING INDUSTRIES ACCORDING TO NUMBER OF OPERATIVES PER FACTORY (End of 1935)

	Cotton Spinning Industry				Cotton Weaving Industry			
Operatives per Factory	Number of Factories	Total Number of Operatives			Number of Factories	Number of Operatives		
		Males	Females	Total		Males	Females	Total
1–4	--	..			43,394	8,210	82,369	90,579
5–9	227	313	785	1,098	2,258	1,916	12,425	14,341
10–14	17	44	144	188	847	1,435	7,431	8,866
15–29	16	113	197	310	1,089	3,209	18,436	21,645
30–49	7	96	183	279	369	2,364	11,243	13,607
50–99	6	96	311	407	224	2,802	12,629	15,431
100–199	4	76	572	648	119	3,378	13,290	16,668
200–499	33	1,883	10,860	12,743	59	3,461	13,639	17,100
500–999	72	6,674	46,166	52,840	14	1,402	8,092	9,494
1,000 & over	61	10,808	89,479	100,287	16	2,730	19,246	21,976
TOTAL	443	20,103	148,697	168,800	48,389	30,907	198,800	229,707

The above figures need no comment. In spinning mills women supplied 88 per cent labour and in the weaving mills about 87 per cent.

WOMEN IN MATCH INDUSTRY [1]

Year.	Plants.	Male workers	Female workers.
1909	192	4,763	12,039
1914	179	4,613	13,064
1919	185	5,498	14,921
1924	99	2,833	8,317
1927	88	2,553	7,151
1930	137	2,071	4,571
1933	143	2,467	5,683
1939	153	2,400	5,710

The above figures clearly illustrate what contribution women make to match industry. Ninety per cent of them are either very young or old—younger than 16 or older than 50.

HOW THEY ARE TREATED.

I have personally seen in many places, and particularly the Kanegafuchi Mills at Kobe, that the girl workers are treated with care and kindness They do their work as a joyful duty and not as a burden as workers in India do. With wonderful smartness, alertness and cheer I found the girls managing their task creditably. The neatness in the working and residential areas can prove a great lesson to many countries. A beautiful park, a cinema hall, a school and a hospital attached to these mills are clear proof of how labourers are cared for. Their beddings, clothes and rooms were decidedly much cleaner than those of some of the millionaires in India. Their double-storey hospital was far superior to the Civil Hospital at Delhi. When I saw groups of " off duty girls " loitering in the park in their multi-coloured kimonos, my eyes refused to believe that they were labourers. Some of the princesses in India would envy the freedom and cheerfulness of the working girls in the Kanegafuchi Mills.

Besides free educational courses, women operatives in these Mills get free health insurance and medical service, with bonuses when they leave, based on an allowance of from 40 to 60 days of wages at the end of one year of service, and 10 per cent to 20 per cent more for each additional year. The average term of employment is two and half years. The usual reason for leaving is marriage. No indenture is required for admittance, and no restrictions are imposed on personal freedom except as are necessary to maintain fair discipline.

This Mill is one of the great Kanegafuchi system, which manages 115 factories for spinning, weaving, knitting and finishing cotton, silk, rayon and wool, employing 45,000 operatives. Excepting Russia, I dare say no other country arranges things like health lectures, study groups, reading circles, circulating libraries, theatrical and other

[1] Figures supplied by B M Kato, Nippon Match Co , Kobe

entertainments, football, baseball and tennis for workers But these are common in big Japanese factories.

TREATMENT VARIES.

But this does not mean that every single girl worker is treated so admirably. The treatment differs according to the size, capital and kind of industry. It is true that in some smaller industries the treatment is not even half as good, but, in general, working hours have been reduced, and workers have far better status than they ever had in 25 centuries. The future of Japan is in the hands of her daughters.

CHAPTER XII

HOW JAPAN GROWS MORE

JAPAN LEADS THE WORLD

INDIA PRODUCES ONE THIRD

WORLD FIGURES AT A GLANCE

COMPARATIVE RICE YIELDS. HOW THEY DO IT

WORLD'S BEST FARMERS—HELPFUL GOVERNMENT

IMPROVED RICE VARIETIES

IMPROVEMENTS IN WHEAT

IMPROVEMENTS IN TEA

IMPROVEMENTS IN SILK

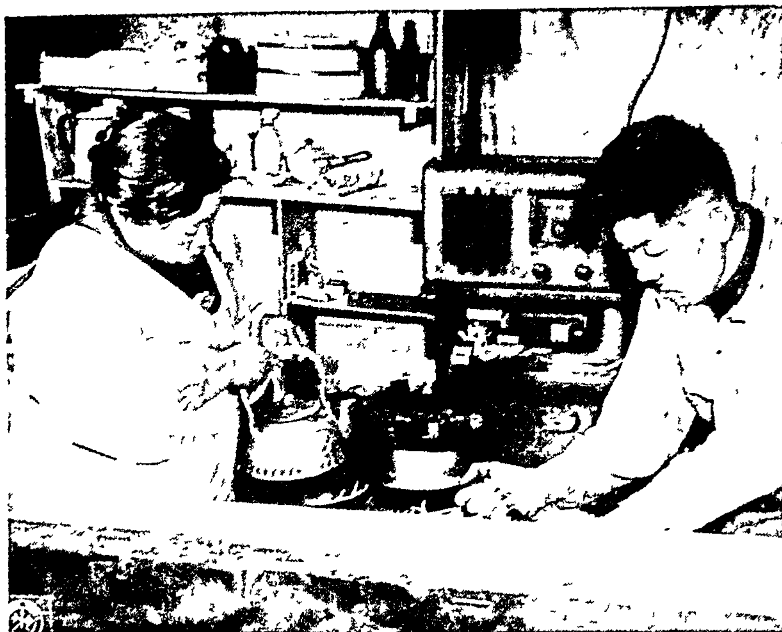
EXTENSIVE USE OF FERTILISERS

BETTER CONTROL OF PESTS

IMPROVED AGRICULTURAL METHODS

RESEARCH LABORATORIES' HELP

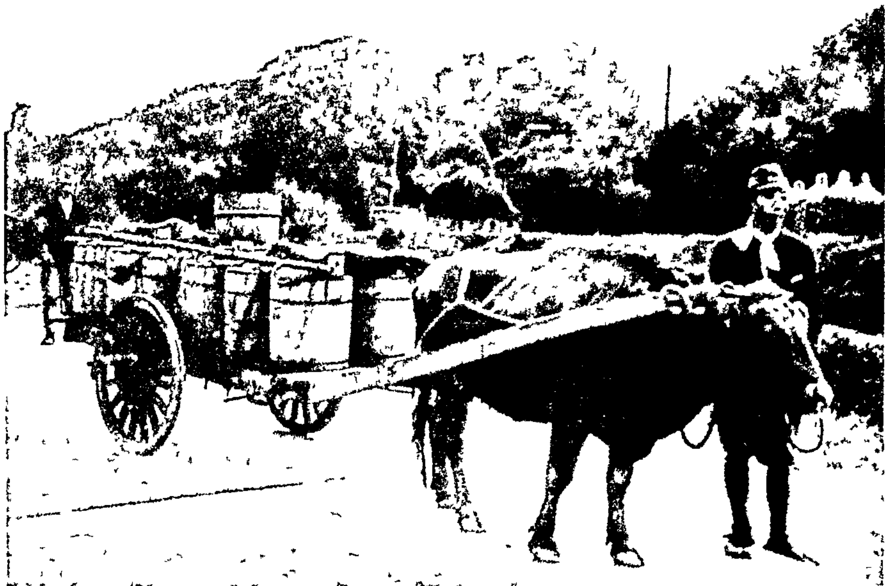
WORLD RECORD IN MILK.



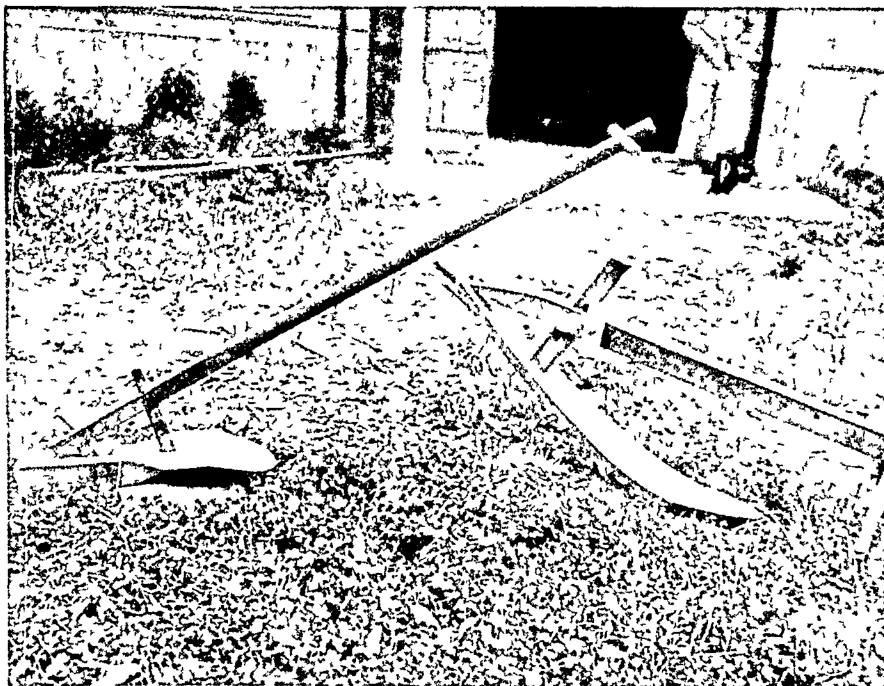
Workers have Radio



Miracles of Power—Looms making Bags from Straw



They waste nothing. Night Soil for the Fields



Digging Rows



O K Tractoı



Graın Scıeen



Cheapest Threshing Machine



Model Sowing Machine

CHAPTER XII

HOW JAPAN GROWS MORE

Believe it or not, Japan produces three times more rice per acre than we in India do.

*   *   *   *

The world's highest record of milk production is held by a Japanese cow and out of ten records of egg production, seven records are held by Japan.

*   *   *   *

Only about 16 *per cent of the land area of Japan is cultivated. About one-third of the land is double or multiple-cropped. From this land (twenty million acres) Japan extracts roughly* 80 *to* 85 *per cent of food required.*

Japan has lessons for us not only in her wonderfully organised cottage and small industries but also in her agriculture and farming methods. We have been talking of "Grow More Food" and yet every year we have been importing more and more food because our food supplies are proving smaller and smaller. If we really want to grow more food we will have to go in for cultivation by means of tractors. A country of small farms like ours should derive much benefit from the Japanese farming methods are responsible for producing three times more rice per hectare than we in India do despite our hardworking farmers. The fertiliser system of Japan and China (which I have discussed at length in the last chapter) deserves our closest consideration, because fertiliser is the main secret of the very high production of food in Japan.

In the 60 years preceding 1940, agricultural production in Japan showed remarkable increase, resulting primarily from increased yields per unit area of land rather than from an extension of the

cultivated area. This is best illustrated in the case of rice, the mainstay of Japanese agriculture. Japanese rice yields are much higher than those in other major rice-producing countries. During 1931-34, rice yields in southern and eastern Asia were :—

COMPARATIVE RICE YIELDS[1]

Countries	Cleaned Rice (Metric tons per hectare).
Japan	2·8
China	1 7
Formosa	1·7
Korea	1·2
British Malaya	1 1
Java and Madeira	1 0
India	1·0
Burma	1·0
Siam	1·0
Philippine Islands	0 8
French Indo-China	0 7
Ceylon	0·6

How They Do It

The high yields in Japan have resulted from the ample use of man power, improved rice varieties, abundant use of fertilisers and improved agricultural practices. Such intensive farming has accentuated the ill effects of multiple cropping, as well as those associated with continuous cropping.

World's Best Farmers

Our farmers have the reputation of being very hardworking and enterprising but they cannot beat the Japanese farmer in his ingenuity in making the best out of the smallest piece of land. Japanese farms are like artistic orchards and you feast your eyes on them while travelling in a Japanese train. Not an inch of land is wasted by the Japanese farmer. In post-war Japan I saw footpaths even on the main roads in Tokyo and Osaka being utilised for growing wheat. Every bombed house has been converted into a small farm where wheat or vegetables are grown. A huge temple compound on the Tokyo-Yokohama road has been converted into a model farm. Every inch of land along the railway line is being utilised for growing food, as it is done in England, but think of the millions of acres of land lying waste in India along

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[1] *SOURCE* · Wickizer, V. D. and Bennett, M. K., *Rice Economy of* Monsoon Asia, Stanford University, California, 1941.

our railway lines alone. If the farmers working on the land adjoining railway lines are permitted to grow even one crop after the rains how much food can be had for practically nothing. I will deal with our problem in the last chapter. Now let me tell you more about Japan.

The Japanese farmer believes in incessant hard work. He has a deep affection for the land and all things agricultural. He sincerely believes earth to be the mother of all things that sustain mankind. He literally worships Dhartimata—Mother earth. He does not believe in leaving crops to the mercy of kismet (fate). He believes in scientific agricultural management. He believes that good agricultural results cannot be attained by individual farmers working separately and hence he concentrates on co-operation with fellow farmers. Japanese farmers are the best farmers in the world whether they are in Japan or anywhere else. In Honolulu, California, Brazil and Peru they had established very prosperous settlements before the war.

Helpful Government

The Japanese Government, whatever its mistakes in being involved in a suicidal world war, has always been very helpful to the farmer. No wonder the Japanese farmer had the most prosperous and happy time during the war.

Government had organised a unique system of agricultural co-operative societies which form a kind of people's Government in every village. The official system of food control (introduced years before the war) made the farmers a truly prosperous community. Government has always helped the farmer by introducing new agricultural techniques, new varieties of seeds, a chain of research stations all over Japan, efficient machinery suited to the characteristics of Japanese agriculture, dissemination of agricultural knowledge, reclamation of lands and supply of chemical fertilisers. Efficient machinery is bought by co-operative societies and distributed to members or used co-operatively. Stock raising and dairy farming are encouraged as side lines by farmers.

Cottage and small industries are encouraged and efforts are made to see that no farmer is unemployed but adds to his income and the national income by learning some industry to keep him busy in the non-farming season.

As in most countries, increases in yields in Japan have been brought about by a number of factors, including especially improved methods of cultivation, extensive use of commercial fertilisers, better control of insect and plant pests, and better varieties of crops says Mr. Solomon, an American investigator.

In a paper, a copy of which he gave me for my use, he writes :—

An understanding of why yields are relatively high and of how improvements have been brought about depends to a considerable extent on a knowledge of Japanese agriculture. As is well-known, the four islands—Kyushu, Shikoku, Honshu, and Hokkaido—which constitute nearly all of post-war Japan, are mostly mountainous. Only about 16 per cent of the land area, or 15,000,000 acres, is cultivated. The cultivated land is divided among about 5,500,000 farms, averaging 2.7 acres each. About one-third of the land is double or multiple-cropped, so that about 20,000,000 acres of crops are grown annually on the 15,000,000 acres of land. From this land Japan extracts roughly 80 to 85 per cent of the food required for her 80,000,000 people, plus considerable quantities of non-food crops for domestic use or export.

The cultivated land consists mostly of coastal plains and narrow river valleys extending up into the mountains, the latter often no more than a few rods wide at the upper extremities The largest plain is the Kanto Plain in which Tokyo is located. This comprises about 3,600 square miles, roughly equal in size to two Iowa counties The need for cultivated land is further emphasised by the terraces found in nearly all parts of Japan, especially in the older sections such as in Kyushu and along the inland sea. They extend up the hill or mountain sides, often to several hundred feet, and frequently are walled with rock to hold the soil in place. One cannot fail to marvel at the relatively enormous amount of labour required to level the land and build the walls to provide, in many cases, no more than a few square yards on which a few handfuls of rice or other crops may be grown. They can be rationalised only by remembering that they are the accumulated result of several hundred years of effort.

A conspicuous feature of the landscape of certain areas in Hokkaido, especially the Obihiro district east of Sapporo, is the wind-breaks consisting of one or more rows of trees that have been planted to prevent soil blowing. The land was surveyed in blocks 300 meters square and trees were then planted on all borders, the net result being that each block is surrounded on all sides by trees The soil is a volcanic ash easily blown by the lightest wind. Rainfall in this area is adequate for most crops. The situation is therefore quite different from that in the Great Plains of the United States where wind-breaks have been strongly recommended.

Improvements in Rice Production

Since rice is the most important single crop and the basic food crop of Japan, it is not strange that attempts to improve yields per acre have received much attention The acreage has increased about 25 per cent, the yield per acre 70 per cent and total production 113 per

cent during the 65-year period represented by these data Two factors appear to have been primarily responsible—the use of commercial fertilisers and better varieties. The relative effects of the two cannot be determined by the data at hand ; indeed, in the eyes of Japanese investigators they cannot be separated since each is dependent on the other. That is to say, it seems to be the general belief that the better varieties produced in recent years are better only when heavily fertilised and also that the better varieties must be grown if the full benefit of fertilisers is to be expected

It has recently been estimated by Matsuo that in 1945 no less than 69 per cent of the total rice acreage of Japan was devoted to new varieties and selections produced by the agricultural experiment stations. New varieties produced by hybridisation account for 46 per cent and selections from old varieties the remaining 23 per cent. In some Prefectures practically all the rice acreage grows these new varieties.

As in the United States, improvement by hybridisation is a rather recent development, having been employed to an important degree since 1920 though used to some extent as far back as 1903. Interest in hybridisation was greatly stimulated by the discovery that certain varieties from India are resistant to piricularia, the most important rice disease in Japan. The first resistant variety to be produced—Rikuu 132—distributed in 1925 in northern Honshu proved so popular that rice growers erected a monument at Akita to commemorate the event

IMPROVEMENTS IN WHEAT.

The increase in the production of wheat is of special interest. While it was a relatively minor crop in 1878-82, it is now second only to rice or a close third if common and hull-less barley are considered as one crop. Acreage since this early period has increased 119 per cent, yield per acre 140 per cent and total production 425 per cent. Nearly half the increase in production has taken place since 1932 when the Imperial Japanese Government inaugurated a 5-year programme to increase domestic production in order to reduce imports.

As for rice, the increases in yields per acre appear to be due largely to the development of superior varieties and the use of commercial fertilisers. Here also the interrelations between variety and fertiliser has been emphasised by Japanese investigators. This relates not only to the quantity of fertiliser used, but also the particular kind—potassium for example. The response of different varieties to soil acidity has also received considerable attention. These relations are considered of sufficient importance that when it became apparent after the war that the supplies of commercial fertilisers would be very inadequate, varietal recommendations for certain areas were modified to meet the changing situation.

Improvement in Tea Production.

The increase in the production of tea is of interest since a decrease in acreage of more than one-fourth has been more than offset by the increase in yield per acre of about 180 per cent. As a result of the latter, total production in 1938-42 was almost three times that of the earlier period. Accompanying this has been a marked reduction in labour requirements, especially for picking and curing. The modern method of clipping with shears which is used for a major share of the crop as compared with hand picking is said to have reduced the labour cost of gathering the leaves to about one-tenth of the former figure.

Improvement in Silk Production.

It would be difficult to cite an example of a contribution of science to agriculture that is more striking than is provided by the improved methods of producing silk in Japan. Certainly there are few agricultural industries that have profited more from research or in which success has depended so much on research.

There have been improvements all along the production line. They include every problem from breeding, propagating, fertilising and care of mulberry trees to the use of F_1 hybrid silkworms and translocation of genetic characters by means of X-ray techniques. To tell the complete story would require a large volume. Two contributions appear worthy of note here because of their relation to agricultural research in general and their influence on silk production. They are: (1) the use of F_1 hybrid silkworms and (2) treatment of silkworm eggs to permit hatching at any desired time of the year.

F_1 hybrids between selected varieties of silkworms are now used almost exclusively for the commercial production of silk in Japan. The hybrids are more vigorous, less susceptible to disease, spin larger cocoons, and produce more silk and a better quality of silk than do those of any pure variety. The basic discoveries leading to the use of F_1 hybrids in silk production were reported by K. Toyama of Tokyo Imperial University in 1909 (8) and were put to practical use four or five years later. The sharp upward trend in silk production which began with the 1913 to 1917 period is generally attributed to this contribution.

The use of F_1 hybrids requires controlled mating of the silkworms, a laborious and time-consuming process because of the difficulty in distinguishing the sexes. This problem has been largely overcome by transferring sex-linked markers to several of the parent varieties, not however until translocations induced by X-rays were resorted to in order to effect the desired combinations. By means of these markers the sexes can be readily identified in the larval stage. Commercial utilisation of this principle was made in Japan in 1945 for the first time.

This contribution of genetic science to a practical problem is analogous to the transfer of sex-linked markers in poultry which has attracted the attention of poultry breeders in the United States in recent years.

The second important achievement is the treatment of silkworm eggs, the development of methods of storage, and artificial hatching of the eggs so that monovoltine varieties of silkworms may be produced at any time during the year. Monovoltine classes are preferred because of the better quality of cocoons they produce. Untreated eggs, like the seeds of certain plants, remain dormant for a considerable time unless exposed to a rather specific combination of environmental conditions Because the eggs normally hatch only in the spring, the silk farmer has been limited to what silkworms can be produced in a brief period each year. The new methods permit hatching at any desired time during the year.

Various other developments too numerous to mention here have had important effects not only on production, but also on the quality of silk and reduction in the labour costs of producing it.

PLANT BREEDING METHODS.

Plant breeding methods generally used in Japan are similar to those in the United States and Europe. The basic sciences, especially genetics, cytology, plant pathology, and entomology have played important roles in developing fundamental relations on which sound programmes can be based. Individual classes of causal organisms are recognised but either are less important or knowledge concerning them has been developed to a less extent than in the United States The compatability of different varieties of the same crop for crossing, especially of rice and sweet potatoes, have received much attention. Incidentally, the possibilities of wheat-rye crosses are being re-investigated. Experimental fields are much smaller than in the United States, but more numerous at least in relation to the area of cultivated land. Field plots generally are small, similar to rod row trials in the United States. Replication is the general rule but statistical methods for the interpretation of results are seldom or never used.

Studies of ecological relations as a basis for plant breeding have received much attention as a foundation for crop improvement. It is sometimes referred to as the genetico-ecological approach to plant breeding By this is meant a determination of the reaction of varieties to specific environmental conditions and in turn the relation of these to adaptation and distribution of specific varieties These include not only the usual climatic factors such as the length of growing season and precipitation, but also to such specific factors as summer air, and water temperatures, sunshine including the effect of fogs, depth of snow, especially in relation to snow blight, frost damage at various

stages of plant development, soil acidity, levels of soil fertility with respect to different mineral elements, specific disease and insect pests, and the relation of soil fertility to diseases of various kinds. Because of the great range in soil fertility and the universal use of fertilisers, Japan affords a unique opportunity for studies of the relation of soil factors including fertility to the adaptation of varieties and the prevalence of various diseases. Japanese literature appears to be rich in contributions of this nature, many of which would be of great interest, but which unfortunately are not generally available because they are not reported in a language easily read outside of Japan.

THE AGRICULTURAL EXPERIMENT STATIONS.

As mentioned earlier, research has had a most important part in the development of better methods of crop production.

The important agricultural research organisations of Japan are the Agricultural Experiment Stations and the Agricultural Departments of the five Imperial Universities. The agricultural experiment station setup is one of the most extensive in the world considered in relation to the area of cultivated land. *A total of 595 Imperial, prefectural and private, main and branch station and experimental farms, and research laboratories dealing with all agricultural problems have been reported.* Many of these do little more than serve as demonstration farms or for the production and distribution of seed and plants of superior varieties to farmers. Nevertheless, there are no less than 225 stations whose primary function is research with field crops (*i.e.*, rice, wheat, barley, etc , but not fruits, mulberries, silk or vegetables).

The organisation of the experiment station system is interesting. It includes both Imperial and Prefectural Experiment Stations each supported by their respective governments. The Imperial stations include the Imperial Agricultural Experiment Station (so-called) which deals with field crops ; the Imperial Horticultural Experiment Station ; the Imperial Tea Station, the Imperial Sericultural Experiment Station ; and the Imperial Zootechnical (livestock) Experiment Station. Attached to each are a number of branch stations and experimental farms located in various parts of the Empire. Paralleling these in most cases are the prefectural experiment stations. That is, each prefecture usually has an agricultural experiment station, a horticultural station, a sericultural station, and a livestock station. There are also a considerable number of special stations or laboratories, both Imperial and Prefectural. Examples of these are the Imperial Veterinary Laboratory, the Aomori Prefectural Apple Experiment Station, the Shizuoka Citrus Experiment Station, the Shizuoka Prefectural Horse-radish Experiment Station, one or more each for

Irish potatoes, sweet potatoes, maize, tobacco, cotton, and many others

In general, the separate Imperial stations are independent of each other as are also the separate prefectural stations, except that branch stations and experimental farms are dependent upon the main stations for support and general direction.

This organisation suggests, as is indeed the case, that the Japanese policy has been to establish a large number of small stations each with limited responsibilities rather than single large stations each with multiple responsibilities as is generally the case in the United States. This seems to have resulted in considerable unnecessary duplication of facilities so far as research is concerned, but, nevertheless, may be desirable from the viewpoint of disseminating information to farmers by direct contact in a country where travel is not too easy and where other provisions for bringing results of research to the attention of farmers are somewhat limited.

WORLD RECORD IN MILK

JAPAN MADE REMARKABLE PROGRESS IN LIVESTOCK INDUSTRY DURING THE LAST TWO DECADES BEFORE THE WAR. THIS PROGRESS WAS MADE CHIEFLY DUE TO THE GOVERNMENTAL ENCOURAGEMENT OF LIVESTOCK BREEDING AS A COUNTER-MEASURE FOR OVERCOMING THE FARM DEPRESSION IN THE LAST HALF OF THE TWENTIES. For example, the number of cattle (inclusive hogs, horses and goats) slaughtered in 1940 was more than three times the figure for 1920. The production of eggs which was 1,134,367 thousand in 1920 reached the record high figure of 3,642,988 thousand in 1937. Milk production showed a more remarkable increase. It increased to 392,854 tons in 1941 from 66,089 tons in 1920, almost a five-fold increase during this period.

IN JAPAN, UNLIKE IN OTHER COUNTRIES, LIVESTOCK INDUSTRY IS NOT CARRIED ON A LARGE SCALE BUT BY INDIVIDUAL FARMERS WHO HAVE ONLY TWO OR THREE CATTLE AS THE RESULT OF THIS SMALL SCALE BREEDING, THE CATTLE ARE BETTER TAKEN CARE OF THAN IN OTHER COUNTRIES AND THEIR EFFICIENCY IS THEREFORE QUITE HIGH. THE WORLD'S HIGHEST RECORD OF MILK PRODUCTION IS HELD BY A JAPANESE COW AND OUT OF TEN RECORDS OF EGG PRODUCTION, SEVEN RECORDS ARE HELD BY JAPANESE POULTRY.

Another characteristic of Japanese livestock industry is its high dependence upon imported feed. Statistics reveal that the above mentioned increase in livestock production was accompanied by a

correspondingly increased importation of feed. In order to develop livestock industry in such a small land as Japan, the dependence upon imported feed is inevitable as well as advantageous because the size of Japanese farm is so small. For instance, a farmer with an average size of farm (about one cho) must use from 10 to 20 per cent of his land for feed growing if he feeds one cow by home-made feed. He can feed his cow more economically by purchasing imported feed and plant that one piece of land with more valuable crops than feed plants In the latter years of the thirties, Japanese Government, in an attempt to increase its foreign fund, imported copra meal and distributed it to milch cow farmers who made a contract with the Government to ship milk products for export. In this way Japan exported milk products worth about 5 times more than the value of imported cattle feed.

CHAPTER XIII.

MILLIONS FROM THE SEA (*Marine Products*)

THREE MILLION EMPLOYED

SEVENTY-NINE MILLION YEN INCOME

LARGEST FISHING TRADE

WORLD'S FORTY PER CENT CATCH

SEVEN MILLION TONS

FISH IS STAPLE FOOD

AMERICA BIGGEST CUSTOMER

FROZEN MARINE PRODUCTS

CANNED PRODUCTS

VITAMIN OILS

SEA-OYSTERS

SODIUM ALGINATE—SEA WEEDS BRING MILLIONS

PRODUCTION OF AGAR AGAR—OTHER PRODUCERS

EVIL EFFECTS OF WAR

LACK OF ROPES

CHANCE FOR INDIA

FISHERIES EDUCATION

SCHOOLS AND COLLEGES

NEWLY-REFORMED SYSTEM

THREE YEARS' COURSE

FEDERAL RESEARCH STATIONS

PLANS FOR FUTURE

UNIVERSITIES WITH FISHERY COURSES.

CHAPTER XIII.

MILLIONS FROM THE SEA (*Marine Products*)

Three million persons are employed in the fishing industry in Japan and forty per cent of world's fish catch is the result of their wandering from Rangoon to Mexico and Vladivostok to Fiji in the South Sea.

* * * *

India with an extensive seacost can earn dollars from fishing industry—An American Expert.

* * * *

In 1935 *Japan exported marine products worth seventy-nine million yen to all parts of the world.*

Land is popularly known as Mother, but the sea is in no way less motherly as far as Japan is concerned. The great oceans from the Arctic to the Indian and from the Pacific to the Bay of Bengal have been serving the Japanese as their " pastoral lands." Japanese are the world's greatest fish hunters. Before the war fishing was Japan's number three export industry. I have seen Japan's fishing boats from Rangoon to Mexico and from Vladivostok to Fiji and Australia during my several tours round the world. Pre-war Japan occupied first position in the export of acquatic products and world's forty per cent fish catch was secured by Japanese fishermen The Japanese cannot afford much meat. They eat hardly one fiftieth of what the British eat but fish and rice are their daily food They however concentrate more on exports than on their own requirements. The following official report throws light on this great national industry, the work of the fisherman.

OFFICIAL REPORT

Before the war, acquatic products ranked third in amount among all the export goods of Japan, and were valued at about 300,000,000 yen. In those days, about 40 per cent was shipped to China and the Southern regions, with dried products constituting the chief export items To America and England were sent canned goods, which occupied 60 per cent of the total export value.

After the war, however, export conditions changed, and presented different aspects as compared with pre-war times. While canned products had been chiefly forwarded to America and Europe before the war, the production now sharply declined to one-tenth of the pre-war level resulting from loss of fisheries and acute shortage of canning materials. Supremacy in export has now been transferred to frozen goods. Thus finished products have been superseded by processed materials. Freezing of foodstuff needs various equipment to secure freshness. This is one of the greatest difficulties facing the producers.

At present, America is the biggest customer for marine products including frozen stuff. That the Chinese market is not yet fully restored is proving a serious blow to the export of Japanese acquatic products. But it is expected that trade with China will be restored eventually and its future is very hopeful.

Another bottleneck is the difficulty of procuring funds. Before the war, the greater part of foreign trade, to say nothing of Chinese trade, was carried on directly or indirectly by the Mitsui and Mitsubishi concerns, which provided funds. After the war, however, the Zaibatsu was dissolved, and the marine products trade is now hard pressed for funds.

Being generally high-grade, export items have been costly. Moreover, with the marine product industry, a large amount of funds must be kept frozen for a certain length of time, because there is usually a long interval between collection of materials and transaction of business. This is why merchants cannot accept large orders which have been placed with them since the termination of the war. Therefore, it is strongly desired that some steps be taken to cope with such situations.

The following are the principal marine products for export for which orders have come in successively after the war. A bright future for them can be expected.

A. Frozen Marine Products.

Canned stuff which ranked highest among exportable marine products has now been replaced by frozen articles. The tunny (Bincho Maguro) which is valued because it tastes like turkey, and other frozen products are mostly shipped to America.

Those scheduled for export in 1948 were as follows. All were intended for the American market. The figures below were expected amounts of export.

	Tons.
Tunny (Bincho Maguro)	3,000
,, (Makajiki)	1,500
Edible frog	300
Shell-ligament	150
Fish liver	1,000
Miscellaneous	500

Post-war export is classified below. About 10,000 cases of canned crab meat were produced in 1947, and of this 6,000 cases were sent to America. Among other shipments there were 7,000 cases of 1945 production to Belgium, 500 cases to Hongkong, 8,000 cases of 1946 production to America and 1,000 cases to Europe.

Also 200,000 cases of sardines preserved in tomato sauce are scheduled to go to America and Belgium.

Other canned fish included in the export project of 1948 are :—

	Cases.
Salmon and trout	10,000
Sardines preserved in oil	22,000
Boiled sardines	20,000
Sardines preserved in spice	23,000
Smoked yellowtail preserved in oil	1,000
Oysters preserved in oil	3,000
Boiled mackerel	20,000
Boiled Asari (Tapes Philippinarum)	2,000
Boiled ligament of scallop	3,000
Boiled ell	1,000

Of the canned fish, crab, salmon and trout now enjoy the largest demand from countries abroad. Regrettably, however, the catch is very slight because of the lost fishing grounds. The situation cannot be helped until fishing in the northern seas is vigorously revived. So, for the time being, canning must be focussed on tunny and sardines. The actual number of orders exceeded the above figures. Agar-agar is produced from sea-weeds which are found inexhaustibly along the shores of Japan Though there is no fear in that respect, yet the question remains that production has not yet been fully developed due to the high price of sea-weeds. But in future agar-agar will be among the most hopeful Japanese marine products for export.

Vitamin Oils.

Vitamin oils are good quality liver oils containing 30,000 units of vitamin. The components are classified as A oil and D oil A oil, of course, contains a great deal of vitamin A, and is extracted from the livers of black tunny and other kinds of fish (such as Mekajiki and Makajiki) and used for medicinal purposes, mixed with margarine D oil is taken from the livers of bonito, tunny (bincho), yellowtail and mackerel and also mixed with feed for hens.

Last year, 56 tons of vitamin oils were shipped abroad and this year an export of about 100 tons is expected. Yet this amount only meets 3 to 4 per cent of American needs In America, vitamin D has been successfully synthesised and decreased in price. So shipping of the livers is permitted now. But vitamin A is not manufactured artificially and is exceedingly costly, so that America does not allow the livers to be exported. Accordingly, what troubles Japan at present

is that the procurement of livers for vitamin oils cannot be expected to increase unless a larger catch is tried.

D. General Marine Products.

Last year, dried products such as shell ligaments, shark-fins, sea-slugs, ear-shells and squids were sent to Hongkong and Singapore and herringroe and dried bonito to America, aggregating approximately to 200,000,000. Dried ear-shells, ligaments, sea-slugs, etc were originally exported to China and the southern countries in considerable quantities chiefly for Chinese tables After the war, however, the export trade to China is not yet fully restored due to shortage of production and the unstable internal conditions of China.

These products have the oldest record in Japanese export and, moreover, are indispensable to the Chinese diet Therefore this business will certainly return to pre-war state in future. The following were exported (dried) last year.

	Pcl.
Shell-ligaments	3,673
Shark-fins	1,206
Sea-slugs	4,400
Ear-shells	1,029
Squids	3,870
Bonito	600

E. Goldfish and Carp.

Considerable numbers were forwarded overseas before the war. Last year, 1,000 lbs. of goldfish and 2,500 lbs. of fancy carp were shipped out These are hopeful items of export to America

F. Seed-Oysters.

More seed-oysters were sent abroad after the war than before the war. The export of this article only has been carried out as scheduled. Last year, 56,674 cases were recorded, but this year about 40,000 cases are expected because of American conditions, making a slight decrease as compared with last year But as large orders are anticipated from Australia and Canada, it will be possible in future to export about 100,000 cases every year.

G Sodium Alginate

Sodium alginate is a new export article that has appeared for the first time after the war It is manufactured from sea-weeds of the laminaria family and others Because these sea-weeds are abundantly found in Japan just as in the case of agar-agar, demands will cover a very large scope from foodstuffs to industrial materials. Accordingly this is an item the production of which should be pushed vigorously. As it is, it is not yet industrialised on a large scale, but merely exists as a by-product. If a factory is built exclusively devoted to the production of sodium alginate it is certain that the product will play an

important role in the future export map of Japan —*Nippon Times, 15th July, 1948.*

MILLIONS FROM WEEDS.

Japanese are the most hardworking race. They make millions from sea-weeds while we never think of exploiting them despite our vast sea coast and hundreds of lakes full of weeds of great medicinal value. The following summary on the subject is taken from report No. 42 of the Natural Resources Section of the SCAP (General MacArthur's government) which has published very valuable literature .—

1 Japanese dominance in the production and exportation of agar-agar is so great that the product may be considered peculiar to Japan

2. The five largest consuming countries of Japanese agar-agar, judged by their imports, were the United States, England, Germany, France, and the Netherlands East Indies

3 The method of manufacturing agar-agar in Japan, while primitive, is essentially simple and effective Little mechanical or stationary equipment is required and no expensive or scarce ingredients are used Wood for fuel is the largest single item of supply. Four pounds of fuel are required for each pound of raw material used.

4 In the United States and most other countries agar-agar has many uses Chiefly, it is used in the manufacture of confectionery, laxatives, cosmetics, and bread , in meat canning ; in dental products ; and for bacterial culture media. Other uses included the clearing of wines and vinegar, the glazing of textiles and upper leather ; use in cordials and condiments and in welding fluxes In Japan its chief use is as a food Although agar-agar has practically no food value, when mixed with beans or various kinds of fruit, it is highly regarded by the Japanese

5 Although some agar-agar was diverted for war use in the manufacture of shatterproof glass for airplanes, the industry is primarily a peacetime one. The method of gathering and processing the raw material employs a large number of persons The product is of high quality and is in world demand

6. The agar-agar bearing sea-weed is abundant along the entire coast of Japan. The most important sources are the Izu Islands and the coast of Shizuoka Prefecture

7. During the decade from 1930 to 1940 the average annual production was 2,476 metric tons, and the average value was 10,569,486 yen. Sixty-one per cent of the average production was exported In 1945, because of a shortage of labour for gathering the sea-weed, production fell to 716 metric tons The value went up in proportion to the

scarcity of the finished product, reaching a level of 5.7 yen per pound compared to the average price of 1.5 yen per pound in the years from 1930 to 1939 inclusive.

Agar-agar is a big export item in Japan. Biologists need it as the perfect medium for bacteria culture. Doctors use it in surgery. It plays an important role in industry. Every country uses it, the United States in particular. There was scarcity of it during the war because this came mainly from Japan.

Agar-agar, the Malayan word for "sea-weed" from which vegetable gelatine is made, has been exported in large quantities. The first post-war shipment of 47,800 pounds left Japan for the United States on June 10 last year. Because of the universal demand and the narrowness of its source—there are some produced in Australia and in California but the bulk comes from Japan—there is always less of it than the world wants. However production is being revived with the help of SCAP.

The sea-weed industry today is found along the entire coast of Japan but conditions most suitable to the best species are found along the coast of Shizuoka Prefecture. Called "kanten" in Japanese or "jelly by natural freezing" this appellation gives the key to the process of its manufacture. First the weed is boiled after being received in mountain areas where the temperature is mildly freezing. The gelidium, rising to the top is skimmed off and cut into the shape wanted, either in strips or bars. Containers of these are set out in the open to freeze and thaw for two to three weeks. This removes the water and impurities. Although the method is primitive it has been found to be unmatchable to other scientific processes.

Agar-agar is used in clarifying beer and wines, in meat packing, making jelly and ice-cream and in the textile industry for sizing cloth. It is also necessary in printing and engraving. As petrolagar it is a laxative.

Agar-agar is manufactured in winter, that is December to March, and therefore the best season for purchasing the commodity is February to April. Before shipment it is divided into grades according to colour, solubility, amount of impurity, strength, etc.

Agar-agar has a tremendous demand all over the world as material for confectionery making and germ culture. America despatched orders for it right after the war. Export amounts last year are classified below according to destination.

	lbs.
America	263,000
England	200,000
China	46,600
Hongkong	17,500
Additional	194,800
TOTAL	722,000

Production in Areas Outside Japan Proper.

1. In 1915 Japan started the production of agar-agar in Karafuto (Sakhalin Island). *Ahnfeltia plicata* and *A. plicata var Tobuchiensis* are found in fair quantities in the Karafuto and Kauril Islands area. These species are called itaniso by the Japanese. Unlike the other species, itaniso is not mixed with other kinds of sea-weed in the manufacture of agar-agar. Production in Karafuto was increased yearly until recently the annual production amounted to 825 metric tons or 23 per cent of the total production of Japan.

2. In 1917 Japanese industrialists started manufacturing agar-agar in Korea. Most of the various species of sea-weed used are available in considerable quantity along the coast of Korea At present the annual agar-agar production capacity of Korea is 635 metric tons. Since the Japanese manufacturers have left Korea, it is reported that only a few plants are operating and that production is negligible.

3 Dutch industrialists of the Netherlands East Indies started production of agar-agar when China placed a boycott on Japanese goods They constructed plants in several South Sea Islands where raw material is found in sufficient quantity. Production figures of this enterprise are not in the possession of the Japan Agar-Agar Control Company. Exports from Japan to the Dutch East Indies fell off from 228 metric tons in 1934 to 64 in 1940.

4. In 1937 some Japanese agar-agar manufacturers went to Chintow, China, to attempt the organisation of a like industry in that area. Raw material was found along the coast in small quantity, but, as the water in the processing area was not of suitable quality, the project failed.

5. Australia and New Zealand began the production of agar-agar during the war years, and Australia is now producing about 80 metric tons a year with the possibility of a much larger production. New Zealand produces about 15 tons a year, but this agar is of a much higher quality than other agar-agars and is ideal for bacteriological use. A solution of 0.65 per cent gives a solid medium. This agar-agar is colourless with low ash and organic content.

6. The United States entered the agar-agar production field as late as 1937 but, because of lack of raw material, was only able to produce an amount sufficient to meet military demands and to maintain a stockpile during the war years. As little agar-agar bearing sea-weed is found along the coast of the United States, most of it must be imported from Mexico. A considerable quantity of this raw material is found along the coasts of Lower California and Mexico Proper.

7. An inferior grade of sea-weed of several species called "kirinso" by the Japanese was formerly imported from Formosa. A substance

used medicinally was extracted from the weed ; the residue was used in the manufacture of agar-agar. An annual average import of 110 metric tons of high-grade agar-agar bearing sea-weed was also made from Formosa.

EVIL EFFECTS OF WAR.

Like all other industries fishing industry has had a great setback as a result of the terrific war.

Various difficulties confronting the fishing industry are discussed by Kenjiro Okubo, in JITSUGYO TEMBO "Japanese economy is still in a muddle," he writes. "Key industries still have to recover, and industrial enterprises as a whole are encountering serious difficulties under the prevailing inflationary trend The fishing industry is no exception, and, although a fair number of companies are now in operation, the volume of business is only a shadow of its pre-war self. This general decline may be attributed to the restricted fishing areas, and to the loss of fishing boats sustained by such leading firms as Nippon Suisan, Nichiro Gyogy, and Hayashi-Kane. However, tuna and bonito fishing, with other trawling operations, are quite active in the Kyushu area and offer hope for the future."

"Bottlenecks in fishing operations are many," Okubo states "Especially notable are shortages of vessels, oil, ropes, and capital. Shortages are responsible for the current reduced operating schedule of many firms. An ocean-going tuna boat, for example, currently makes only six round trips yearly as compared with a pre-war average of eight. With construction costs of vessels increasing daily, fishery enterprisers are encountering grave difficulties in bringing forth any profitable form of operation. This situation is due, in part, to the Government's inconsistency in not fixing official prices for shipbuilding, while taking rigorous measures to maintain the official price of fish."

This writer goes on to discuss the official price scale for fish, and argues for abolition of controls in order to encourage the industry. He closes by stating that "not only can the food problem be solved through the fishing industry, but great contributions can be made to the foreign trade situation through the production and marketing of canned goods on a nationwide scale."

The toughest bottleneck ahead of the fishing industry, according to an ORIENTAL ECONOMIST staff writer, is the shortage of such supplies as rope and nets. Especially serious "is the present scarcity of fishing rope, as the actual supply accounts for only 10 per cent of the estimated demand. In the case of fishing nets, supply is estimated to meet about 20 per cent of demand.

"Manila hemp is the most important material for fishing rope, and about 150,000,000 pounds were imported annually during 1935-1936, of

which about 69,000,000 pounds were used by fisheries. Fishing interests claim that their present demand for Manila hemp is about 700,000,000 pounds, with an estimated minimum need of about 40,000,000 pounds. By comparison with this figure, the Government's hemp allotment represents only six per cent. During the April-June period of 1947, for example, only 249,000 pounds of hemp were supplied. What is worse, of this amount, Manchurian hemp (semma) comprised the major portion. The allotment for the July-September period was increased to 60,000 pounds, but was not supplied in full. As for Manila hemp, the first shipload after the end of the war, amounting to 1,600 bales, arrived in July 1947 ; of this 1,167 bales were allotted for fisheries, 100 bales for ship equipment, and 333 bales for export purposes.

India could supply not only rope but fishing nets too if this industry is organised.

FISHERIES EDUCATION.

No large-scale industry can be developed without government guidance and active help The Japanese Government lays the foundation by providing trained technicians in every fishing village and research laboratories in the centres of industry as is clear from the following report compiled by the Natural Resources Section of the SCAP. The report has such valuable ideas for our fishery schools of the future that I have not condensed it so that our experts and fishery students can derive fullest benefit from its contents .—

1. In keeping with the importance of fish and marine products in the general economy of Japan, the Japanese Government has placed much emphasis on fishery education and fisheries research, both biological and technological.

2 Japan has 32 prefectural fisheries schools in 24 prefectures. These schools give special training in the biology of fishes and chemistry of marine products as well as technical and practical training in fishing, fish processing, navigation, boat building, and allied subjects The schools are designed to train men to be expert fishermen, and cannery managers Graduates from the prefectural fisheries schools are eligible to enter the two fisheries colleges, one of which is at Hakodate, Hokkaido, and the other at Tokyo. The colleges offer three and five-year courses in fisheries. Three of the seven Imperial universities in Japan have fisheries departments in their faculties of agriculture. The departments offer a three-year course leading to a college degree. This is the highest level of fisheries education in Japan Japan has 118 government-supported fisheries and marine products research stations and branches Six are operated by the Government and 112 by prefectures These stations conduct research in fisheries biology, fishing methods, and fisheries products

3. Twenty-one marine and fresh water biological stations are associated with universities and fisheries colleges. These stations are designed for instruction, but much valuable research is done in fisheries biology by the university professors. Two of the large fishing companies operate three laboratories for research in the biology of fishes One privately endowed marine research station is in Japan. In addition to the marine stations in Japan Proper, the Japanese operated 14 fisheries research stations in Korea, five in Formosa, one in Karafuto, one in the South Seas, one in Kwantung, and three in Manchuria.

A SKILFUL FISHERMEN.

1 Japan, because of its dense population, meagre food resources, and insular position, was driven by necessity to become a fishing nation. Fish supply most of the animal protein and a considerable amount of the fat in the Japanese diet The Japanese developed into such skilful fishermen and extended their fishing grounds so far afield that they were able to produce for many years prior to 1941, not only enough fish for their own consumption, but developed a vigorous fish export trade as well.

2 In keeping with the great importance of the fisheries in Japan, the educational system of the country and the research facilities in fisheries biology and technology have received more attention and government support than in any other country in the world

3 All the elementary schools in Japan teach about fish in their natural history courses. When a student passes out from the elementary school, he may attend any one of 32 middle fisheries schools These are known as Prefectural Fisheries Schools (Kenritsu Suisan Gakko) The schools are located so that nearly every prefecture with fishery interests has one or more The middle fisheries schools are designed to train students to be expert fishermen, cannery foremen, net-makers, and for other semi-specialised jobs. Graduates from the prefectural fisheries schools are eligible to enter the fisheries colleges

4 The two fisheries colleges in Japan are the Hakodate Fisheries College in Hakodate, Hokkaido, and the Tokyo Fisheries College in Tokyo[1] These colleges offer three to five-year courses in coastal fisheries, fisheries technology, agriculture, and teacher training. The physical plants of both institutions are now being used as billets for occupation troops The colleges continue to operate, however, in temporary quarters

5 In addition to the fishery schools and colleges, three of the seven Imperial universities in Japan Proper have departments of

NOTE—The information presented in this report was gathered and compiled by Capt John L Kask, Fisheries Division, Natural Resources Section

[1]Until April 1946 the Tokyo Fisheries College was known as the Imperial Fisheries Institute

fisheries These university departments represent the highest level of fisheries education in Japan Three-year courses are given which lead to a university degree, the Gakushi Graduate schools are also provided which grant the Hakushi or doctor's degree The universities train men for research and the highest civil service positions attainable by technically trained men.

6. Besides the provision made for fisheries education at every level and for every purpose, Japan has 118 Government-supported fisheries and marine products research stations and branch stations. The Imperial Government supports the largest, the Imperial Fisheries Experimental Station in Tokyo, with five branch stations strategically located throughout the country. The station and its branches carry on investigations in all fields of fisheries biology, fisheries chemistry, and oceanography They also gather daily records and prepare monthly reports on the location of warm and cold bodies of water, broadcast weather reports, and the whereabouts and movements of fish.

7. Forty-four prefectures support 112 research stations and branch stations These carry on research in local problems relating to the fisheries industry, both biological and chemical Some of the stations and branch stations do only fresh water research In addition to these, 21 marine and fresh water biological stations that do biological work in fisheries and related subjects are associated with universities and colleges Two large fishing companies have private laboratories with branch stations doing biological and chemical research in fisheries, and there is one privately endowed marine fisheries and biological station A total of 145 marine and fresh water fisheries research stations are investigating the chemistry and biology of marine products in Japan Proper. One of the stations is in Okinawa

8 An important research station is located in Fusan, Korea, in addition to 13 branch or provincial stations in Korea, five stations in Formosa, one in Karafuto, one in the South Seas (Palau), one in Kwantung, and three in Manchuria Before the war, 170 marine research stations were operated in areas controlled by Japan

B FISHERIES EDUCATIONAL INSTITUTIONS

1 *The Prefectural Fisheries School*

(*a*) Entrance to the 32 prefectural fisheries schools in Japan is limited to those who pass out of the six-year elementary schools At times these schools are run separately from the prefectural fisheries research stations In some cases the staff serves both as teachers and as members of the research staff.

(*b*) A typical example is the Kanagawa Prefectural Fisheries School at Misaki

(1) This school consists of a two-storey frame building, which was designed to accommodate 200 students ; an annex, and separate laboratory.

(2) Entrance to the school is limited to students who have completed the elementary schools, or persons who are at least 12 years old and have passed a test equivalent to that of the graduation test of the elementary schools

(3) Though the school was designed to accommodate 200 students, only 91 were registered in 1945. The age of the students varied from 13 to 19 years.

(4) The regular teaching staff has six members including the principal, plus three part-time instructors, a wireless telegraph instructor, two clerks, a part-time school doctor, and a school dentist.

(5) The school course lasts four years, and the following subjects are taught : ethics, geography, history, music, mathematics, English, wireless telegraphy, zoology, fisheries, hydrology, meteorology, fishing boats, machinery, drafting, practical boat exercises, and navigation.

(6) Support for the school comes from entrance fees, tuition fees, and prefectural government grants Its expenditures in 1945 amounted to approximately yen 27,000.

2. *The Fisheries Colleges.*

(*a*) The Hakodate Fisheries College, at Hakodate, Hokkaido, operates under the Ministry of Education, and the Tokyo Fisheries College, Tokyo, operates under the Ministry of Agriculture and Forestry. These colleges or higher schools of fisheries, give courses which last from three to five years according to the type of study selected.

(*b*) The Tokyo Fisheries College is a direct descendant of the oldest higher fisheries school in Japan. The first fisheries school was organized in 1889 under the auspices of the Fisheries Society of Japan This school was transferred from the society to the Imperial Government of Japan in 1897, when research and experimentation were added to its original scope In 1929 it was formally reorganized as an educational institution and was called the Imperial Fisheries Institute (Suisan Koshujo). In April 1946 the name was changed to Tokyo Fisheries College.

(*c*) The College operates under the Ministry of Agriculture and Forestry. It is the only educational institution in Japan not

under the supervision of the Ministry of Education. Thus, a certain degree of freedom and independence has resulted.

(*d*) The appropriations received by the College since 1940 are as follows :

Year	Regular Budget. Yen	Special Work. Yen	Total. Yen.
1940	487,880	76,169	564,049
1941	532,841	57,586	590,427
1942	539,754	23,198	562,952
1943	567,949	100,909	668,858
1944	620,131	56,501	676,632
1945	725,671	662,807	1,388,478

The steady increase in appropriations in the regular budget and the steep increases in the special work budget during th war years, should be noted.

(*e*) In addition to the school in Tokyo, the following field stations are maintained for practical exercise·

(1) Tateyama Station, Chiba Prefecture, gives practical exercises in fishing methods, meteorological observations, manufacture of fishing gear, swimming, rowing, and sailing boats.

(2) Numazu Station, Shizuoka Prefecture, provides practical instruction in fish canning and processing.

(3) Kominato Marine Biological Laboratory, Chiba Prefecture, is used for experiments on salt-water fish and for meteorological observations.

(4) Kanasawa Station, Kanagawa Prefecture, was taken over by the Imperial Japanese Navy and is not used as a fisheries station at the present time.

(5) The Yoshida Station, Shizuoka Prefecture, is used for practical exercises in fresh-water fish culture.

(6) Oizumi Station, Yamanashi Prefecture, is used for scientific research and the study of the culture of cold fresh-water fishes.

(*f*) The Tokyo Fisheries College until recently operated two vessels One is the " Unyo Maru, " a three-masted barque of 444 tons. This is an old vessel that is now moored near the College. It was used for practical exercises in seamanship The second vessel is the " Shinkotsu Maru " This is a trawler of 500 gross tons and 1,400 horse-power. It is loaned to the College by the Ministry of Agriculture and Forestry. The "Hakuyo Maru," 1,327 gross tons and 1,400 horse-power, formerly owned and operated by the College and one of the best equipped and most modern fish research vessels in the world,

was taken over by the Japanese Navy in February 1943 and was sunk by Allied submarine action in March 1944.

(*g*) The College divides its curriculum into three sections. The regular course, the post-graduate course, and the pelagic fisheries course. The regular and the post-graduate courses are further subdivided into the fishing, the technological, and the fish culture courses.

(*h*) The regular course lasts four years. Only successful graduates of the four-year course of the middle or prefectural fisheries school, or high school graduates are eligible to enter. Candidates are limited in number and are rigorously selected.

(*i*) The post-graduate course is open only to graduates of the College with high academic standing and the recommendation of the director.

(*j*) The pelagic fisheries course lasts two years and only highly qualified graduates of the regular course are eligible to attend.

(*k*) Courses of instruction are offered in general and aquatic zoology, general and aquatic botany, ichthyology, bacteriology, fish diseases, chemistry, oceanography, meteorology, history of fishes and fishing, fish culture, fishery law, practical exercises in fish canning and processing, mathematics, physics, morals (now banned), English, German, economics, finance, merchandizing, navigation, seamanship, the theory and manufacture of fishing gear, principles of fishing boat construction, diesel and steam engineering, machine designing, practical exercises at sea, swimming, rowing, and first aid. Before the war military training by the army was included During the war navy training was introduced

(*l*) The College has a student body of 300 to 400. The number of students who graduated from 1940-1945, in the various sections of instruction, are shown in the following table :

Year.	Fishing Course	Technology Course.	Fish Culture Courses	Total.
1940 .	33	30	18	81
1941	32	28	19	79
1942 .	35	32	16	83
1943 ..	36	36	20	92
1944	37	34	29	95
1945	51	46	26	123

The total number of graduates from 1897 to 1945 was 2,778. The Institute employs 170 people including the boat crews.

(*m*) The Hakodate Fisheries College parallels the teaching and research carried on at the Tokyo Fisheries College. In addition to the courses outlined above, the Hakodate College offers a course for training teachers in fisheries subjects.

3. *The Universities.*

(*a*) Three of the seven Imperial universities in Japan Proper have departments of fisheries. These universities are the Hokkaido Imperial University at Sapporo, Hokkaido, the Tokyo Imperial University, Tokyo, and the Kyushu Imperial University, Fukuoka These departments offer three-year courses which lead to a college degree in fisheries, the " Gakushi " which corresponds to a Master's degree.

(*b*) The oldest and most renowned department of fisheries is at the Tokyo Imperial University. It forms one of seven departments in the Faculty of Agriculture. On the staff are four professors, three assistant professors, three lecturers, five regular, and seven or eight part-time laboratory assistants. Graduates from the Tokyo Imperial University, for the most part, make up the staff of the fisheries departments of the other two universities.

(*c*) Courses of instruction are offered in the following subjects · zoology (general and aquatic), botany, plankton, oceanography, properties of natural water, principles of fisheries, culture of aquatic products, methods of fishing, technology of fishery products, hydro-biology, bacteriology and pathology, animal histology and embryology, organic chemistry, refrigeration, fisheries law, applied meteorology, fishing boat machines, fishing boats, and a seminar in fishing Elective courses offered are experimental genetics, political economy, physical chemistry, and biochemistry.

(*d*) Each faculty also provides a university-hall (Daigaku-In) or post-graduate course. No regular courses of lectures or seminars for graduate students are given, although occasional courses may be offered Two years (usually) are spent in research under a major professor. At the end of this time, the student may present a thesis, which consists of original research, to an examining committee. If the committee looks with favour on the thesis, the candidate is granted the doctor's degree or " Hakushi "

(*e*) The academic year of the university begins 1 April and end 31 March of the following calendar year. The school year is divided into two terms the summer term from 1 April to 31 October, and the winter term from 1 November to 31 March. A summer vacation from 11 July to 10 September and a winter vacation from 25 December to 7 January are provided During the war these schedules were not always maintained.

(*f*) Students applying for entrance to the university must be graduates of the higher schools (Koto-Gakko), of the higher department of the Peers School, or students who have satisfactorily passed an entrance examination given by the faculty The graduates of the higher schools and higher department of the Peers School take precedence over other applicants. At times only a fraction of the eligible

students who apply are admitted to the university, as all faculties and departments of faculties are limited in the number of students they can accommodate.

(*g*) The number of students in the Department of Fisheries during the years 1942 to 1945 was about 60, or 20 in each of the three classes. The number of students before 1942 was only about one-half that number.

(*h*) Summer courses in marine zoology and fisheries are conducted at the Marine Biological Station at Misaki, which is operated by the Faculty of Sciences. Students in the first year attend these classes and exercises for four weeks, in the second year for three weeks, and in the third year attendance is optional.

(*i*) In addition to the faculties at the university and at the Misaki Marine Biological Station, the Department of Fisheries maintains two fisheries laboratories in Aichi Prefecture One is at Shinmaiko on Chita Peninsula and one is at Izumi-mura on Atsumi Peninsula. The former is used for the study of bay and shallow-water fishes, whereas the latter is equipped for studying the culture of fresh-water fishes An aquarium is attached to the Shinmaiko Laboratory, where many fresh and salt-water fishes are exhibited to the public Research is also carried on in the culture of sea-weed and oysters. No instruction is given at these stations, but their facilities are used by university staff members for research. Only one professor and two assistants are on the resident staff of these stations.

(*j*) About one-half of the yearly expenditures of the university is derived from government appropriations. The remainder is derived from tuition fees and from incomes of properties owned by the University.

(*k*) The research work carried on by the faculty and the senior students is usually published in the Journal of the College of Agriculture. In 1943 the publication was suspended. It was then in its fifteenth volume. At times fisheries researches are also reported in the Journal of the Faculty of Science (Volume 6, 1943), in Annotationes Zoological Japonenses (Volume 22, 1943), and in the Zoological Magazine (Dobutugaku Zassi, Volume 56, 1944).

(*l*) The fisheries departments of the other two universities are patterned largely on the Fisheries Department in the Tokyo Imperial University. Both schools have been established only a few years.

C. Federal Fisheries Research Stations

1. The Japanese Imperial Government supports the largest fisheries research station in Japan This is the Central Imperial Fisheries Experimental Station in Tokyo The Experiment Station

operates under the Ministry of Agriculture and Forestry (Bureau of Fisheries), on an annual grant of 720,000 yen.

2. The physical plant consists of three main buildings. The first of these buildings has the administrative office, the director's laboratory, meeting rooms, specimen rooms, records room, and library. The other two buildings are the chemical and oceanographical laboratories. Additional buildings are a large experimental water tank and aquarium building, a radio building, a refrigeration building, a small experimental cannery, extensive machine ships, and numerous small service buildings 25 buildings in all The station operates a research vessel the " Soyo Maru," 220 gross tons, with a 333-horse power diesel engine.

3 In addition to its plant in Tokyo, the Imperial Fishery Experimental Station has field stations at Ueda City, Nagano Prefecture , the Kasaoka Station, Kamizuma-Uchi-Mura, Okayama Prefecture ; the Nanao Station, Nanao, Ishikawa Prefecture , three minor experimental places at Arashima, Shimane Prefecture ; Minato in Chiba Prefecture , and Misaki in Kanagawa Prefecture Each field station has a permanent staff of three or four persons The experimental places have no regular staffs

4 The present staff consists of 21 expert investigators, 14 assistant investigators, and approximately 85 lay employees, including the ship's crew

5 The investigations carried on by the Fisheries Experiment Station are divided into 11 sections as follows

(*a*) Fisheries investigations (life history and population studies)

(*b*) Fish technology (studies in net preservatives, etc).

(*c*) The chemistry of fishery products

(*d*) Fish culture.

(*e*) Fish boat design.

(*f*) Fishing machinery.

(*g*) Physical investigations.

(*h*) Chemical investigations.

(*i*) Biological investigations (taxonomy, etc).

(*j*) Oceanographical investigations (hydrography, marine biology, fish forecasting)

(*k*) Co-ordinating experiments of other stations.

6 This experiment station is obviously held in high repute by the Japanese Government It was allowed to use its research vessel throughout the war and its substantial appropriation of 720,000 yen a

year was never reduced The station authorities are preparing plans to expand their physical plant in the immediate future and to increase the number of workers to take care of additional research necessary for the full use and development of the fishing industry

7. The Imperial Fisheries Experiment Station publishes the results of its research in three main periodic publications

(*a*) The Oceanographical Investigations, a semi-annual report. The last published issue is the July-December issue No. 71, published in October 1943.

(*b*) The Journal of the Imperial Fisheries Experiment Station. This is an annual journal and includes dissertations on the general results of the station's investigations. The last published volume is No. 13 containing papers No. 91-93, published in March 1943.

(*c*) Fishery Investigations, published annually. This includes reports on the chemistry and the biology of fishes and other marine products. The last published volume is No 9, containing papers No 78-83, published in March 1943

D. THE PREFECTURAL FISHERIES RESEARCH STATIONS.

1 Each prefecture with fisheries interests supports a fisheries research laboratory These laboratories conduct research on problems of local interest, both biological and chemical They may or may not be associated with the prefectural fisheries school.

2 The prefectural stations often operate large fishing and research vessels The fish caught incidental to fishing trials is sold on the public market The money from the fish sales reverts back to the government to help defray the expenses of the stations

3. Fishery police or patrol vessels often operate from these stations At times investigators are called upon to act as police in addition to their other duties, although regular water policemen under the prefectural police department are also supplied

E MARINE RESEARCH STATIONS ASSOCIATED WITH COLLEGES AND UNIVERSITIES

1. Fifteen marine research stations are associated with universities in Japan and six are associated with colleges Though these stations are provided primarily for practical instruction for students, they also serve as places of research for university professors Life-history work and research in systematic ichthyology is done at these places as well as research in other marine organisms

F FISHERIES AND MARINE RESEARCH STATIONS OPERATED BY PRIVATE COMPANIES.

1 Of the three big fishing companies in Japan, two have laboratories that conduct research in marine biology and chemistry. In fact,

some of the best fisheries research work done in Japan is done under the auspices of the Nippon Suisan K. K (Japan Marine Products Co, Ltd) The research was initiated and conducted by the company and the research records were carefully guarded

G PRIVATELY ENDOWED MARINE RESEARCH.

1. Japan has one privately endowed marine research station. This station, near Shimoda, Shizuoka Prefecture, was founded and supported by Takanage Mitsui. All phases of marine biological research are carried on at this station by both paid and volunteer workers.

H. RESEARCH STATIONS IN FORMER COLONIES AND MANDATED AREAS.

1. In Korea a large marine research station at Fusan is supported by the Central Korean Government. The central station has two branch stations In addition to this, 11 provincial stations and branch stations are doing research in problems of local interest

2. Formosa has one central research station with a branch station and four provincial stations.

3. In addition to the above the Japanese operated one research station at Karafuto, one at Palau in the South Pacific, one at Dairen, Kwantung, and three in Manchuria

I. PLANS FOR THE FUTURE.

1 In spite of the imposing array of fisheries schools and experimental stations which Japan already has, the Japanese are thinking of adding more. New schools are being opened in Shimane and Wakayama Prefectures. Petitions are being circulated by the Japan Fishermen's Union to open schools on Kurahashi island, Hiroshima Prefecture, on Otsushima island, Yamaguchi Prefecture, and at Tsuki Mura, Fukuoka Prefecture They also plan to petition for a third fisheries college to be situated in Northern Kyushu In each case it is contemplated to use grounds and existing buildings formerly used by the military.

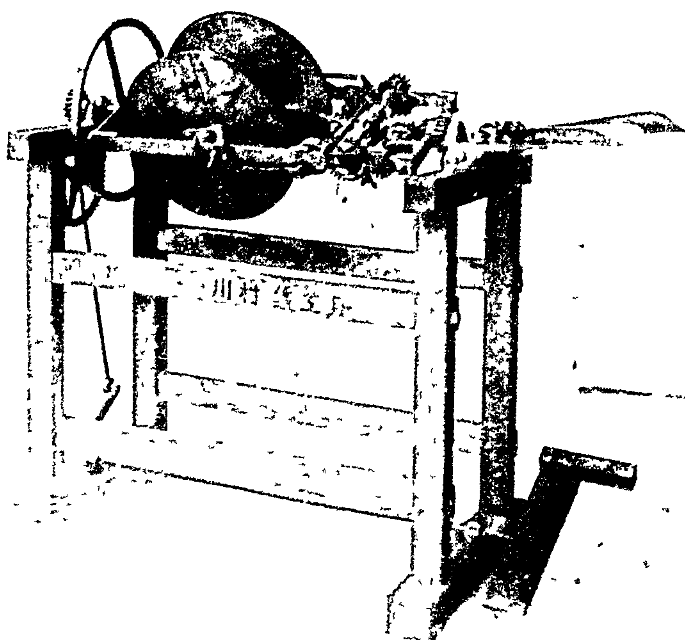
2. A petition is also being presented for the use of abandoned naval and army barracks and installations and for additional investigations in marine biology A number of outstanding investigators want this research to be supported independently by public subscription rather than by a governmental department More than 100,000 yen has already been collected toward this goal.

3. This tremendous activity in education and research in fisheries indicates to what extent Japan believes her future lies in the seas





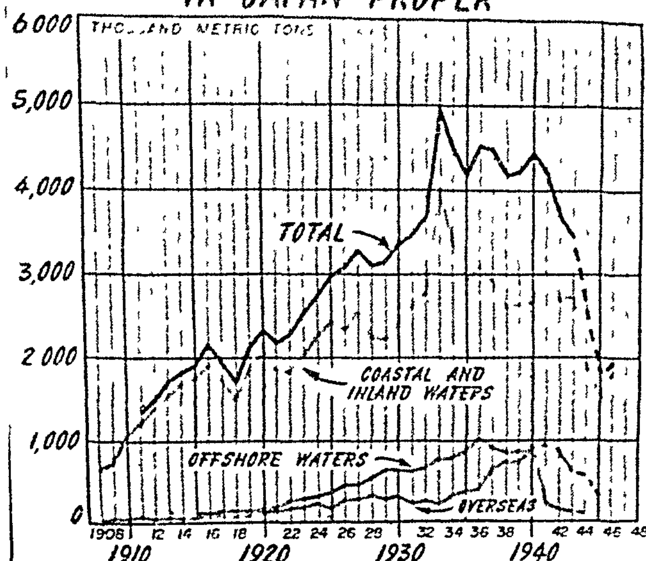
Simple Rice Machine



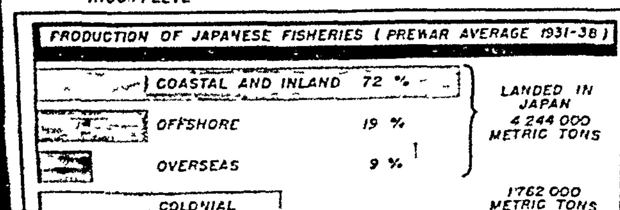
Simple Rope-making Machine



Farm-Factory Products



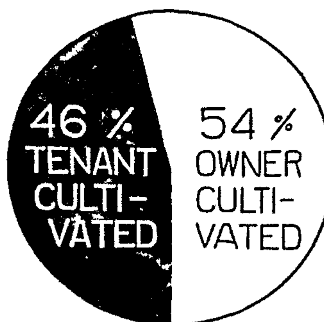
NOTE PRODUCTION FIGURES FOR YEARS SUBSEQUENT TO 1943 ARE INCOMPLETE



PRODUCTION OF JAPANESE FISHERIES (PREWAR AVERAGE 1931-38)

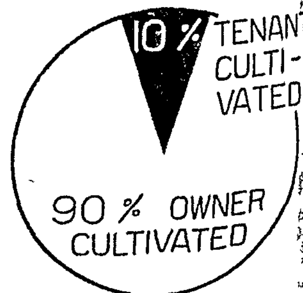
COASTAL AND INLAND	72 %	LANDED IN JAPAN 4 244 000 METRIC TONS
OFFSHORE	19 %	
OVERSEAS	9 %	
COLONIAL		1762 000 METRIC TONS

LAND DISTRIBUTION



DISTRIBUTION OF LAND IN JAPAN 1940

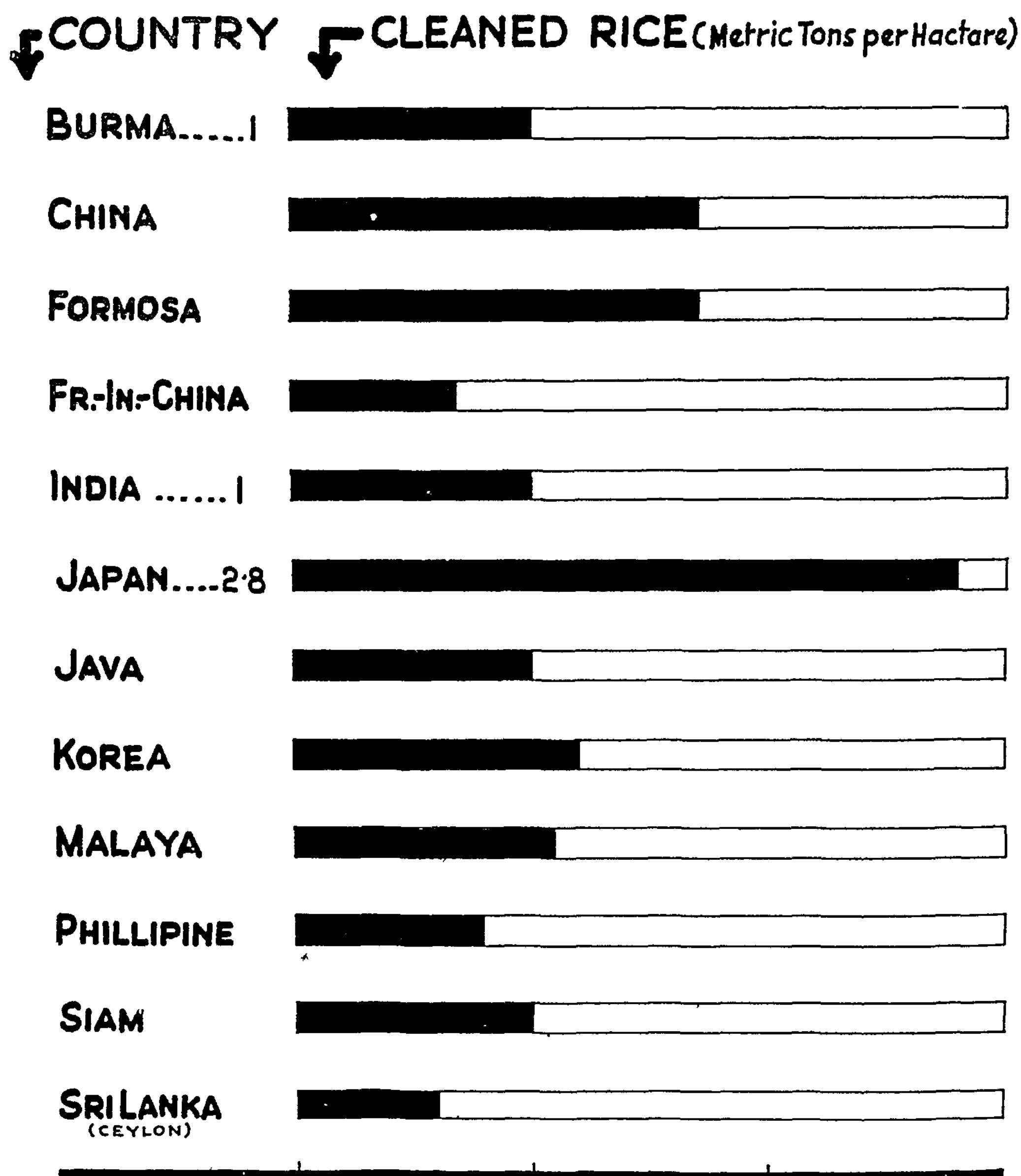
ESTIMATED DISTRIBUTION UNDER NEW LAND REFORM ACT





Millions from the Sea

JAPAN LEADS THE WORLD IN GROWING FOOD



SOURCE – *Wickizer, V.D and Bennett, M.K., Rice Economy of Monsoon Asia, Stanford University, California, 1941.*

H S Bisht

CHAPTER XIV

RURAL INDUSTRIES OF JAPAN

Japan has fifty thousand factories in farm villages and this number is increasing constantly.

*   *   *   *

In 1937 seventy-five per cent of the farmers worked only on farms, 25 per cent engaging also in outside work—rural industries In 1938, fifty-four per cent farmers also held supplementary jobs In 1941, 58·1 per cent, in 1942, 61 5 per cent and in 1943, 65·1 per cent farmers had supplementary jobs—CHUO KORAN.

Japan has fifty thousand factories (employing more than five workers) in the farm villages, and this number is increasing constantly according to a recent estimate by Mr Ueda in a Japanese magazine. The Government is training village technicians for rural industries in 68 model factories Short courses in agricultural industries have been instituted and farmers are given free training Both boys and girls, who have finished their seven years' primary course are recruited for industrial education

Absorbing Surplus Labour

The main objects for encouraging industrial centres in the rural areas are the absorbing of surplus village labour, avoiding congestion of unnecessary industries in the cities, utilising raw materials on the spot and raising the standard of income of farmers by providing them with side jobs to do in their leisure months

The following figures indicate the proportion of farmers engaging in side jobs in addition to their farm work.—

In 1937, 75 per cent of farmers worked only on farms, 25 per cent engaging also in outside work. In 1938, 54·3 per cent held supplementary jobs, in 1941 58·1 per cent, in 1942 61·5 per cent. In 1943, with war efforts reaching their highest point and the total number of farms increasing, 65·1 per cent of farmers were engaged in side jobs In the years from 1944 to 1946 the total number

of farms continued to raise, lowerbracket farmers losing their wartime jobs, and some war workers becoming small-scale farmers. The percentage of farmers with side jobs decreased to 46·4 in 1946, while 53·6 per cent were dependent solely upon farming for their livelihood. The average size of the farms upon which they depended was diminishing simultaneously.[1]

The Government is anxiously encouraging farmers to take up side jobs in the rural industries in order to stabilise the rural economy of Japan. More and more soldiers are returning home from Manchuria and they are being settled in villages and provided with jobs in rural industries since the large industries will take a few years to regain their pre-war glory.

PLAN OF RECONSTRUCTION.[2]

The Government of Japan has recently (June, 1948) evolved a plan of rural reconstruction after the war. The preamble states that in order to reconstruct that national economy of Japan co-operation between agricultural resources and industry is essential. The best and the most profitable utilisation of raw materials can be made in the villages, hence the Village Industries Societies which take care of rural industries are advised to evolve ways and means to secure maximum co-operation between village capital and rural labour. The Government has laid down :

(1) That the centres of the industries listed in the plan should be located in agrarian areas, seaside villages, on the mountain side and in the green valleys where raw materials are available

(2) The capital for such enterprises must be raised co-operatively from the villagers alone.

(3) The labour, as far as possible, should be recruited from the vicinity, exceptions may be made in certain cases

(4) Raw materials should be locally available, exceptions are permitted because sometimes they are unavoidable. For instance, a noted village centre of bamboo industry relies on supply of bamboo from an area fifty miles off

(5) There is no limit on the sale of an industry provided the manufactured articles are in demand in Japan or abroad.

(6) The manufactured goods must be of a high level and different varieties should be encouraged to cater to different tastes

[1] Kurihara in the Chuo Koran (monthly journal)

[2] This was quoted by the Congress President in his address from the MSS of my book so kindly revised by him

(7) The Village Industries Society will have full authority to supervise the rural industries.

(8) The Society will help in raising capital, in organising industries, introducing new techniques, supplying raw materials and disposing of manufactured goods.

(9) The Society will maintain strict watch on the quality and quantity of manufactured articles and in fixing sale prices for local markets.

(10) The Society must have close contacts with agrarian, marine and forest societies in the rural areas.

(11) Capital aid will be provided by the Central Agrarian Bank when the Village Industry Society submits a plan after a thorough survey of the industrial scheme and the necessary statistics.

120 VILLAGE INDUSTRIES.

The list of rural industries, most of which I have personally witnessed, is unbelievably ambitious and those of us who think village industries mean only gur making, honey culture and coarse cloth and coir manufacture will be rather startled to know that the Japanese Government officially lists the following (among others) as rural industries to be encouraged by the Village Industries Society which works under the patronage of the Ministry of Agriculture.

I Food Industry.

1 Wheat flour making.
2. Potato flour.
3. Sweetpotato flour.
4. Starch from Corn and Potato.
5 Sugar.
6. Sweetpotato glucose
7 ,, whisky.
8 Potato Glucose.
9 Apple wine
10 Grape wine
11. Orange wine.
12. Meat.
13 Fish
14. Soyabean paste.
15. ,, cheese.
16. ,, milk and curd
17. Pickles and jams
18. Candy
19. Dairy milk.
20. ,, butter

21. Dairy cheese.
22. Canning of fruits and vegetables.
23. Cultivation of mushrooms (brings one crore annually).
24. Geese fat.
25. Poultry.
26. Pork products.
27. Duck and fowl.
28. Pickled frogs (considered a great delicacy).
29. Frozen fish
30. Honey culture.
31. Tea.
32. Peanut milk.
33. Peanut butter (Peanut can be used in 102 ways).
(Japan used to export milk and butter before the war).

II. Sea Products.

1. Sea-weed.
2. Agar-agar
3. Sea-weed products.
4. Spungeculture
5 Shell manufactures.

III. Wood Products.

1. Veneer.
2 Furniture.
3. Barrels.
4 Artistic products from wood.
5. Wooden toys.
6. Colgs (Japanese shoes).
7. Sport goods.
8. Wood chips
9. Pulp.
10. Handpaper
11. Chemical pulp
12 Card board
13 Rough paper
14. Thin paper for festival occasions.
15. Paper for interior decoration.

IV. Chemical Industries.

1. Chemicals
2 Medicines
3. Salt
4. Dyes and paints.
5. Matches
6. Carbides

V. Oils and Fats.

1. Rice bran oil (it is a new industry).
2. Camphor oil.
3. Fish oil and fat.
4. Oil from cotton seed.
5. Olive oil.
6. Peppermint.
7. Candles.
8. Wax.
9. Fats.
10. Tung oil (for oil paper).

VI. Textiles.

1. Silk cloth.
2. Cotton ,,
3. Flax ,,
4. Knitted goods.
5. Laces.
6. Embroideries.

VII. Miscellaneous.

1. Fertiliser.
2. Chemical fertilisers.
3. Rabit fur.
4. Leather goods.
5. Soaps and Toilet goods.
6. Bone powder.
7. Glue.
8. Tar.
9. Soot for Indian Ink.
10. Porcelain.
11. Cement.
12. Lime
13. Straw mats.
14. ,, ropes.
15. ,, boxes.
16. Tiles.
17. China ware.
18. Bambooware [1]
19. Musical instruments.
20. Electric bulbs.

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[1] From Bamboo alone Japanese make 1,400 articles

VIII. Machinery.

1. Agricultural machines.
2. Electrical machines.
3. Cameras & binoculars.
4. Bicycles.
5. Metres
6. Torch lights & batteries.
7. Optical instruments.
8. Canning machinery.
9. Spinning.
10. Wood-cutting machinery.
11. Sewing machines.
12. Watches.
13. Iron tools.
14. Bolts & nuts.

TOPIC OF THE DAY.

Industrialisation of rural areas is the topic of the day since, with the return of soldiers and immigrants from all her former colonies, Japan faces the grim problem of providing jobs and food for the incoming millions Industrial magazines are full of discussions on the subject and writers and experts discuss the ways and means to solve this problem of jobs for repatriates

SOME TYPICAL SUGGESTIONS

One of the industrial experts, Watanabe, suggests that light industry, " such as watch and camera making " carried on co-operatively, is particularly well-suited to Japanese rural districts Hajime Mimua declares that " making bamboo articles, for which there is considerable demand in America, also is suitable for providing supplementary jobs for farmers Christmas decorations are in great demand too " Watanabe continues: " Recently I inspected some villages where glass is manufactured Every worker has great confidence in his own particular skill in this work, and there is much competitive spirit But, unfortunately, they conceal their respective technical secrets from each other thereby causing lack of uniformity in the quality of their products "

FROGS FOR EXPORT.

Other enterprises are discussed, including the raising of edible frogs, for which there is believed to be much foreign demand. Mamoru Hirakawa of the Ministry of Agriculture and Forestry announces that experiments are being carried out with the raising of mushroom fungus on a particular type of crushed wood, to provide feed for livestock and thus alleviate one of Japan's acute shortages. He reports also that scientists are working to discover the easiest method of

removing bitterness from acorns (obtainable in large quantities in mountainous areas) to provide a cheap and ready feed.

This is a very brief survey of Japan's rural industries. What Occupied Japan can do, Free India should certainly be able to achieve

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CHAPTER XV

CO-OPERATIVES—BACKBONE OF AGRICULTURE

IDEAL CO-OPERATIVE VILLAGE

PURPOSE OF SOCIETIES

MEMBERSHIP

TWELVE FUNCTIONS

RULES OF ORGANISATION

ELECTION OF DIRECTORS

A B C OF CO-OPERATION

FEDERATIONS OF CO-OPERATIVES

OPERATION AND CONTROL POLICY

DETERMINATION OF CROP QUOTAS

CROP COLLECTION

CO-OPERATIVE AND SOCIAL ACTIVITY

CREDIT FACILITIES

PROCESSING OF CROPS

DISTRIBUTION

CENTRAL CONTROL

SOCIAL SERVICES

HONOUR TO BEST FARMERS

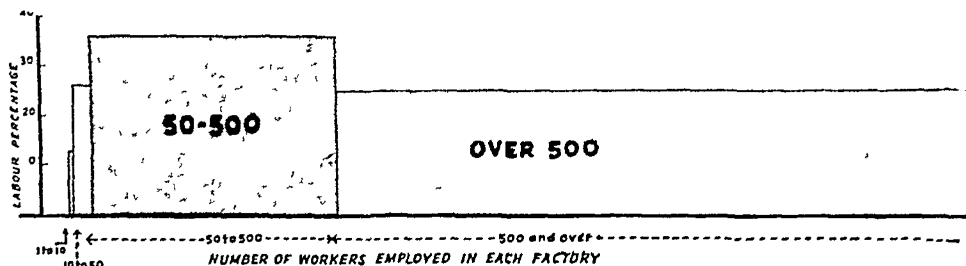
RURAL EDUCATION

VILLAGE LIBRARIES

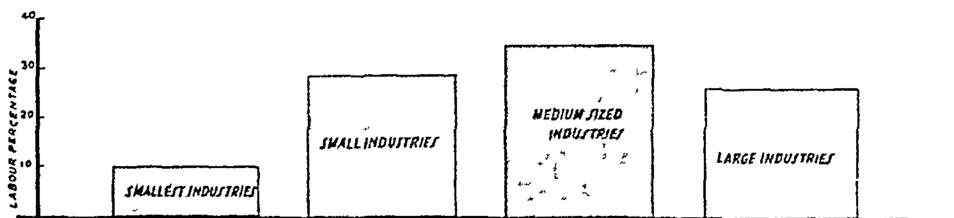
1,400,000, BOOKS CIRCULATED

JAPAN LAND OF SMALL INDUSTRIES

TELLTALE FACTS



With regard to the value of annual output, a rough estimate, taking into account the foregoing facts about the 'dwarf units', shows the following relation between the four categories of industrial establishments:



Or to put it differently: One half of Japan's total production is manufactured in workshops employing less than 75 workers, while the other half is produced in factories employing more than 75 workers. This shows that Japan is still substantially a country of small industries.

BAMBOO PRODUCTS

PROCESS BY HANDCRAFTS 95%

PROCESS BY MACHINES 5%

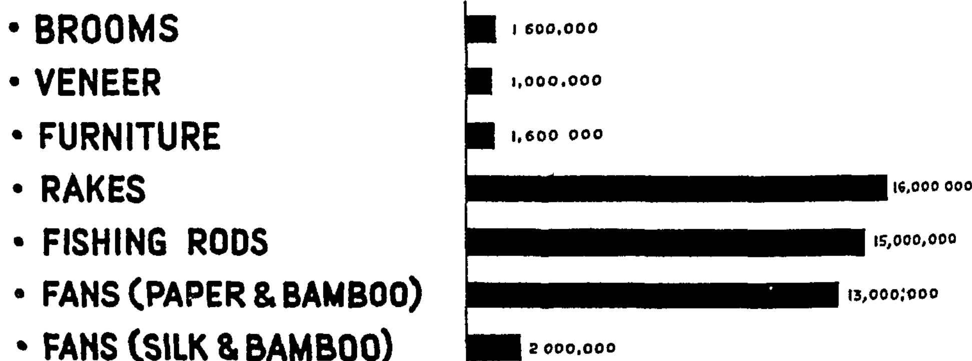
NUMBER OF SMALL (HOME) FACTORIES 14,000

LIMITED COMPANIES only 20.

WORKERS ENGAGED.......150,000..

PRODUCTION CENTRES......All over particularly in SHIKOU and KANSAI.

PRODUCTIVE POWER



Fans are manufactured exclusively in home factories which number 712 and there is no big concern or company manufacturing fans



● Bamboo for export finds expression in endless varieti-es of excellent Japanese handicraft. Baskets, knives, forks, spoons, smoking sets, serviette rings, buckles, buttons, door handles, handbags, walking canes, toys, fishing rods, knitting needles, trays, and pipes are among the myriad products made of this versatile wood.

CHAPTER XV

CO-OPERATIVES—BACKBONE OF AGRICULTURE

Asakura is an ideal co-operative village in Japan. The farmers use the time they are not engaged in cultivation for improvement of their facilities, and raise livestock and cultivate a variety of fruits. The labourers work cheerfully; their profit is held jointly, but is usually invested on machinery or improvements. All participants are on an equal basis, and decisions are made by the will of all the members. The leader of the farm declares that it is necessary only "to eliminate selfishness from the heart, to shut out of our minds the idea of having our own possessions" It is significant that the community did not grow out of any Communist ideology, " but is a life spontaneously generated."

Co-operation, the age-old mutual help system of India, is the backbone of Japan's organisation in industries and agriculture In Japan the far-seeing Emperor Meiji helped to organise the land co-operative societies Now they are a government of the people, by the people, for the people.

Agricultural co-operative associations may be engaged in any of the following functions ; to make loans for reasonable business and personal requirements , to receive deposits , to purchase and sell for those eligible to use the facilities of the co-operative commodities for family and business use , to improve the efficiency of agricultural labour in the performance of farm operations and accomplishment of farming through co-operative orgainsation ; to improve agricultural lands and water facilities ; to process, transport, store and sell goods produced by its members ; to make rural industrial facilities available and to engage in rural industrial activities ; to insure property of its members against damage or loss ; to make available common services which would improve living conditions and the culture of the agricultural community ; to conduct educational activities relative to co-operative associations and farming techniques and to accomplish collective bargaining contracts on behalf of its members.

In another chapter I have related the story of co-operation in Japan.

Volumes can be written on the ideal co-operative life practised in the farms and factories of Japan but the purpose of this brief chapter is to present an outline of the agricultural co-operative organisation which can best be achieved by reproducing a summary of the newly-introduced Agricultural Co-operative Association Law.

PURPOSE OF SOCIETIES.

The purpose of this law is the advancement of the national economy by increasing agricultural production and improving the economic and social status of farmers through the development of agricultural co-operative associations (Art 1) The objective of these associations is to render the maximum service to their members rather than the paying of dividends on invested capital (Art 6).

Two types of co-operative associations are authorised These include co-operatives voluntarily organised by fifteen or more voting members and federations of such associations which may be organised by two or more co-operative associations (Art 55). The official title of any individual association must include the term "agricultural co-operative association" and any federation of co-operative associations shall have the words "federation of agricultural co-operative associations" in its title (Art 2). For purposes of this law the term "co-operative association" shall include both types of co-operatives (Art 3)

MEMBERSHIP.

Eligibility for membership in a co-operative association shall be determined by the articles of incorporation from among farmers and those persons who are not farmers but who reside in the community served by the co-operative and have a reasonable need to utilise its facilities (Art 12). The former shall have voting rights and be personally engaged in agriculture, which shall consist of cultivation, stock-farming and sericulture (Arts 9 and 16). The latter shall be associate members without voting rights (Art 16).

Membership in a federation of agricultural co-operative associations shall be determined, by its articles of incorporation, from among co-operative associations organised under this law and those co-operatives organised under other laws which are engaged in one or more of the functions carried on by the federation The former shall be voting members and the latter associate members without voting rights (Arts 12 and 16)

No special condition not imposed upon other members may be required for acceptance of an eligible applicant nor may such an applicant be refused membership without sufficient reason (Art 20)

Any co-operative association must be a juridical person (Art 3).

TWELVE FUNCTIONS

An agricultural co-operative may engage in one or more of the following functions: (1) making loans for reasonable business and personal requirements, (2) receiving deposits; (3) purchasing for and selling to those eligible to use the facilities of the co-operative commodities for family and business uses; (4) improving the efficiency of agricultural labour in the performance of farm operations and accomplishment of farming through co-operative organisation, (5) improving agricultural lands and water facilities, (6) processing, transporting, storing and selling goods produced by its members; (7) making available rural industrial facilities and engaging in rural industrial activities; (8) insuring property of its members against damage or loss, (9) making available those common services which will improve the living conditions and culture of the agricultural community; *(10) conducting educational activities relative to co-operative associations and farming techniques*; (11) accomplishing *collective bargaining contracts on behalf of its members*; and (12) incidental activities required to accomplish items 1 to 11 (Art 10).

A federation of co-operatives may engage in any of the functions stated in the preceding paragraph and also engage in activities relative to the fostering and guidance of its member associations; however, if a federation engages in the making of loans and receiving of deposits, it cannot perform additional functions not connected with these activities. It may, however, act on behalf of its affiliated associations in discounting bills and guaranteeing debts towards banking organisations with which such associations are authorised to do business (Art 10)

A co-operative association may charge expenses and require contributions in accordance with its articles of incorporation No right of set off may be exercised as to such payments (Art. 17) It may organise as a capital stock or non-stock association; however, no non-stock association may carry on together the functions of making loans and receiving deposits. Liability for a share shall be limited to the amount of the share and in the case of a non-stock organisation the amount of the assessment. In a capital stock association each member must possess at least one share No shares shall be owned jointly; the maximum number which may be owned by a member shall be set forth in the articles of incorporation A share cannot be transferred without the association's consent and if the transfer is to be to other than a member such party must comply with membership requirements and become a member. The transferee shall succeed to all rights and liabilities of the transferer (Arts 10, 13, 14 and 15).

RULES OF ORGANISATION.

The procedure for organisation of a co-operative association is as follows:

(*a*) Fifteen or more farmers must become promoters. In the case of a federation the representatives of two or more agricultural co-operatives shall be the promoters (Art 55).

(*b*) Promoters shall give at least two weeks' public notice stating the purpose, date and place of the preliminary organisational meeting. They shall present to the meeting a prepared programme for the organisation of a co-operative association including the scope of its business, area of function and requirements for membership. At the preliminary meeting a committee of fifteen shall be elected (in the case of a federation two or more directors of co-operative association) to prepare articles of incorporation. The area, membership requirements and matters necessary for drawing up the articles of incorporation shall be by a majority of the farmers present, or in the case of a federation, by a majority of the associations represented (Arts 56 and 57).

(*c*) When the drafting committee has completed preparation of the articles of incorporation the promoters shall call a constituent general meeting giving at least two weeks' notice of the date and place. The articles of incorporation shall be presented for approval and the business plan and other matters adopted at the general meeting The articles of incorporation may be revised except for the provisions relating to the area of operation and membership requirements. One half or more of those who have given their consent for organisation to the promoters by the day of the meeting must be present The agenda of the meeting shall be decided by two-thirds or more of the votes of those present Those who have given their consent to the promoters prior to the meeting may vote by a document of proxy (Art 58).

(*d*) Upon completion of the general meeting the promoters will make application to the administrative authorities for approval of the articles of incorporation and business plan (Art 59) If the procedural and legal requirements are complied with the administrative authorities shall give approval (Art 60).

(*e*) When approval has been given the promoters shall, without delay, surrender their duties to the directors (Art 62).

(*f*) A co-operative shall come into existence by registration in the locality where its principal office is located (Art 63).

ELECTION OF DIRECTORS.

Procedure for the administration of the affairs of a co-operative association is as follows.

(*a*) A co-operative association shall have a minimum of five directors and two auditors (Art 30).

(*b*) *Officers shall be elected at a general meeting of the membership* except at the time of establishment when they shall be elected at the constituent general meeting. Election of officers shall be by written secret ballot One member shall have one vote (Art. 30)

(*c*) A minimum of three-fourths of the directors shall be voting members (Art 30).

(*d*) At least one general membership meeting shall be convened each business year (Art 34)

(*e*) A co-operative association with more than 1,000 members may substitute a representative meeting for a general membership meeting Only voting members may act as representatives and there must be at least 200 representatives (Art. 48)

(*f*) At the close of each business year in which there are surplus funds, each capital stock association shall set aside, as a reserve, not less than one-tenth of the surplus until the reserve fund equals not less than one half of the amount of capital stock. Five per cent of the remainder for each year shall be used for educational purposes The remaining surplus fund shall be applied by paying a dividend not exceeding five per cent on the capital stock and, if any amount remains, it shall be distributed to the members in proportion to which they have patronised the facilities of the association (Arts 51 and 52)

(g) The articles of incorporation may authorise a co-operative to make its facilities available to non-members provided such business does not exceed 20 per cent of the total financial volume of business during any business year (Art 10).

Provisions relating to preferential tax treatment, dissolution, supervision and penalties for violations are contained in the law

A.B C. OF CO-OPERATION.

The following 'A.B.C of co-operation' in questions and answers has been distributed in the Japanese language in every village

Q CAN MORE THAN ONE NEW AGRICULTURAL CO-OPERATIVE BE ORGANISED TO CARRY ON THE FUNCTIONS OF THE AGRICULTURAL ASSOCIATION ?

Yes. This shall be determined by the members. Any numbers of new co-operatives may be organised Any member can belong to more than one co-operative.

Q. WHO CAN ORGANISE A NEW AGRICULTURAL CO-OPERATIVE ?

Fifteen or more farmers. A farmer is a person who is personally engaged in cultivation, livestock production or sericulture. Public notice must be given before the holding of any organising meeting.

Q. WHO CAN BECOME MEMBERS OF A CO-OPERATIVE ?

Qualifications for membership are determined by the articles of incorporation from among individuals who are farmers, and persons other than farmers who have a reasonable need to use the facilities of the Agricultural Co-operative Association. Only farmers may vote Non-farmer members will be associate members. No eligible person can be refused membership without justifiable cause.

Q WHAT CAN A NEW AGRICULTURAL CO-OPERATIVE DO ?

Its articles of incorporation may authorise it to do *one* or *more* of the following :

(*a*) Receive deposits and make loans ;
(*b*) Purchase things for its members ;
(*c*) Process, store, and sell goods produced by its members ;
(*d*) Increase the efficiency of farm labour through co-operative practices ;
(*e*) Improve agricultural lands and water facilities for the purpose of increasing farm production ;
(*f*) Conduct rural industrial activities ;
(*g*) Furnish information regarding better farming techniques ;
(*h*) Insure the property of members against loss or damage ,
(*i*) Bargain collectively on behalf of its members ; and
(*j*) Make services such as hospitals and libraries available to the community.

Q HOW ARE THE OPERATIONS OF AN AGRICULTURAL CO-OPERATIVE DETERMINED ?

The farmers organising an agricultural co-operative will agree upon the rules and the methods for carrying on its activities. They will also determine what kind of activities in which the co-operative will engage The rules are called articles of incorporation They are decided by farmers attending the organisation meetings. The activities of an agricultural co-operative do not need to be limited to a specific geographical area Farmers attending the organisation meeting will decide this question. The number of co-operatives to serve a locality depends upon how many you want to organise.

Q. HOW DOES AN AGRICULTURAL CO-OPERATIVE OPERATE ?

(*a*) Each farmer member shall have one vote ;
(*b*) Officers shall be elected by secret written ballot ,

(c) A board of five or more directors shall be responsible for the business of the association. When a co-operative is first organised, all members of the board must be voting members. At later elections, at least three-fourths of the board must be voting members. Two or more auditors must also be elected.

(d) Surplus savings shall be distributed in proportion to the use made of the co-operative by the members ;

(e) Non-members may be permitted to use the facilities of the co-operative provided the non-member business does not exceed one-fifth of the total business of the co-operative.

Q. WHAT ABOUT FEDERATIONS OF AGRICULTURAL CO-OPERATIVES ?

Two or more co-operatives may form a federation. The decision, whether or not to join a federation, shall be made by each co-operative. Membership of a co-operative in a federation is voluntary. The number of federations is not limited. A federation which makes loans and receives deposits cannot engage in other activities

Q. WHY YOU SHOULD JOIN A CO-OPERATIVE ?

A co-operative is a democratic organisation through which people can accomplish together for their individual benefit things which they cannot do alone Your co-operative helps you to the extent you use it. As the number of members increases, the community benefits.

YOUR RESPONSIBILITY.

This is your opportunity to show your ability to assume the responsibilities of democracy. Don't let any person take away your right to organise the kind of co-operative you wish Co-operative leaders in other countries will watch your progress. The welfare of your family and your community will depend on how you use the democratic powers placed in your hands by the new Agricultural Co-operative Association Law.

ATTEND THE AGRICULTURAL ASSOCIATION MEETING.

....to protect your interests.
....to elect a property disposal board.

JOIN A NEW AGRICULTURAL CO-OPERATIVE.

....to promote a richer life for your family.
....to improve your community.

Bring this pamphlet to the meeting. It will give you valuable information. If you need more information than is locally available, request it from the agricultural officials in your prefecture or from the Ministry of Agriculture and Forestry.

OPERATION AND CONTROL POLICY OF THE AGRICULTURAL CO-OPERATIVE ASSOCIATION.[1]

1. *Introduction*

(*a*) The operational activity of the Agricultural Co-operative Association comprises the dissemination of official policy and the collection of food in rural areas.

(1) Collection of food includes not only the actual acquisition of food, but also the setting of quotas of food which farmers are required to deliver to official collection agencies.

2 *Determination of crop quotas*[2]

(*a*) The initial step in the process of crop collection is the determination of the amount of a farmer's produce that is to be delivered to the government. This amount is based on: (1) the extent of land in a farmer's possession; and (2) the crop itself.

(*b*) The extent and characteristic pattern of farm land is outlined in one of the many land surveys carried on by the Imperial Government These land surveys, which have covered almost all of Japan, have been undertaken at intervals set at the discretion of the Survey Office. The earliest of these surveys dates from the Meiji era (1868-1912).

(*c*) The initial surveys, however, became obsolete as the farm pattern changed. This was caused both by land reclamation and by reapportionment of varied segments of the surveyed fields. In order to cope with this situation, the task of revising data in areas not recently surveyed is delegated by the National Government to local village or town authorities.

(1) Normally it is expected that when changes do occur, the respective farmer will report such changes promptly to the local authorities. The authorities will then send out their own surveyors to check the information thus submitted, and subsequently revise previous land survey data In cases where the farmer has not reported the need for a revision in current survey material, the local authorities, acting on rumours or reports of land change, may institute a revision of the survey. This latter situation is likely to arise when a farmer reclaims a piece of previously uncultivated land but does not report it to local authorities because of his wish to avoid an increase in his crop quota

[1] Although the government control policy over agriculture extends to almost all farm products, rice has been selected for this study because it is the staple food of Japan, and because the policies established for this commodity affects in some way the relationship of every farmer with the Association Characteristics of the Japanese Agricultural Co-operative Association (N R S Report 25).

[2] Source—Material furnished by the Japanese Ministry of Agriculture and Forestry

(*d*) Data on the crop itself are based on three[1] crop surveys of the farm, made during any one growing season. These surveys include · (1) the pre-planting estimate of the segment of land to be devoted to respective crops , (2) the estimate of the yield while the crop is still in growth ; (3) the estimated amount of the actual crop after harvest.

(*e*) The first survey is an investigation of the farmers' land utilisation plans to ascertain what segment of his farm will be devoted to the planting of rice. This survey is carried out by the village headman at the injunction of the prefectural governor In making up his report, the headman must first classify the total crop as either upland or paddy rice Each of these categories is further subdivided into " fine," " fair," or " poor," depending on the quality of the seed used. The resulting six figures are compared with the respective six figures of the median of the harvested crop totals for the previous five years. The ratio of these two sets of figures is then expressed in a percentage. This percentage, called an index number, is the substance of the report submitted to the prefectural governor. The report is due by August 18.

(1) The prefectural governor, in turn, collects the various index numbers submitted by representatives of the units under his jurisdiction and prepares a combined report for his prefecture. This report must be submitted to the Ministry of Agriculture and Forestry by 25 August

(*f*) The second survey is an investigation of the actual rice crop produced during the growing season The headman is again charged with preparing the data His report is based on estimated crop yield As before, the data are classified according to the variety and quality of the crop, but are not expressed in a percentage as in the first survey. The headman submits his report to the prefectural governor. Local factors that may alter the data, such as abnormalities in local weather conditions before the date of investigation, bear directly on the final estimate made by the headman The headman's survey is normally taken on 20 September and must be submitted by 23 September.

(1) The prefectural governor once again collects the local reports This time the reports are referred to a group of designated inspectors for verification before approval This prefectural report is submitted to the Statistics Section, Ministry of Agriculture and Forestry, by September 30.

[1] Before 1944, four surveys were made The second survey, the estimated rice yield, was normally rechecked on 31 October. The report of the headman on this survey was submitted by 3 November , the prefectural governor's report was submitted by 10 November

(*g*) The third and final survey is merely an investigation of the amount of rice harvested This final investigation is made by official inspectors rather than by the headman The headman, however, is usually present as an official witness. A sampling of the farm area, rather than a complete survey, is the basis on which the size of the harvest is finally estimated. The date of this survey will vary from 10 December to 20 January, depending on the harvest date of the region in which the survey is being made. The report of the inspectors must be submitted to the prefectural governor five days after the survey date

(1) The prefectural report is, in turn, submitted to the Ministry five days after receipt of the inspectors' report

(*a*) The official inspectors (Kensai-in) are appointed by prefectural governors for the specific task They are usually graduates of an agricultural middle school who were nominated by the school principal for the position. These nominees must go through a screening process by the local police. Those found acceptable are sent to the prefectural capital for final selection. In rare instances, graduates of primary schools are included in the initial nomination by school principals if the number of qualified middle school graduates is inadequate.

(*h*) Based upon the estimate of the total crop, the government decides what proportion of the crop will be left to the farmers for their own requirements and what proportion will be purchased for distribution to the non-farm population. This latter amount is allocated among the prefectures, and the quota assigned for delivery to each prefecture is allocated among the villages in that prefecture Each village mayor, after consultation with village and Agricultural Co-operative Association officials and representatives of farmers, allocates the quota assigned to the village among the farmers of that village. In assigning quotas to individual farmers, consideration is given to the total production of foodstuffs by each farmer and the number of persons in his family However, the quota assigned does not necessarily leave the farmer sufficient food for his own requirements This is particularly true in years of poor harvest when it becomes necessary for the Government to attempt to reduce farm consumption in order to provide sufficient food for the non-farm population In cases where farmers who fulfill their quotas are left without sufficient food for themselves and their families, they become eligible for official rations upon approval of village governmental officials

3. *Crop Collection*

(*a*) Crops are normally brought to the local agricultural co-operative association by the individual farmer. In return for the

crops, the farmer is issued an official receipt, called a Food Bond The face value of this food bond is, theoretically, payable on demand at the local agricultural co-operative association. These bonds are backed by the government through its financial agent, the Bank of Japan. Although the bonds can presumably be redeemed at the association within three days after issue, it often takes several months for the association to obtain the necessary funds for redemption. During this time, buying and selling of the bonds at a discount is possible since no attempt is made by the agricultural co-operative association to limit payment to the original owner In times of prosperity, the farmer may well be able to hold his unredeemed bonds, but in times of depressed prices, the immediate need for liquid assests may force the farmer to sell his bonds at a discount

(*b*) Although, normally, the farmer is expected to deliver his crop in person to the local agricultural co-operative association, the community "Action Association" (Jikko-kumiai) may, at the discretion of the local association, act as the intermediary link between the farmer and the association.[1] The community headman (Burakucho) is then given full responsibility to meet the quotas of his community on a unit basis. In such cases, the headman allocates the quota among the farmers in his community and issues a personal receipt to each farmer upon delivery of his crop into the headman's possession. The headman, in the name of his community, transfers the crops to the storehouses of the village agricultural co-operative association.

4. *Distribution*

(*a*) Immediately upon receipt at the local association, the crop becomes the property of the government and cannot legally be released through other than officially approved channels. As the rice is delivered by the farmers, the association notifies the prefectural food office of the amount collected.

(*b*) Subsequent distribution to processors, to wholesale and retail outlets, and to brewers is at the direction of the Government through its agent, and the Foodstuffs Supply Corporation (Chiho shokuryo-eidan).

5 *Central Control*

(*a*) Until 1943, central control of the prefectural and local agricultural co-operatives associations was maintained by the National Agricultural Co-operative Association through a body of inspectors.

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[1] The various "Action Associations" (Jikko-kumiai) were founded voluntarily on the hamlet level, starting about 1921 Their primary role was to increase production and offer quick credit based on a single crop future Since the war, membership has been obligatory, and the associations have served mainly in a liaison capacity between the government and the people for educational and crop collection activities

These inspectors (dantai-kakari) were the appointed representatives of various bureaus in the Ministry of Agriculture and Forestry. They were sent out at irregular intervals, at the discretion of the respective bureau, to determine the efficiency of subordinate units of the association. An investigation by the inspectors included a check on the financial situation of the associations, charges of autocratic dire torship, and demands for improved aid in agricultural production by farmers. At times, the prefectural agricultural co-operative association has also sent its own officials into the villages to check efficiency.

(*b*) This inspection by the National Government was suspended during the war because of priority wartime activities; it is now intended that this system be revived according to officials of the Ministry of Agriculture and Forestry.

D. CO-OPERATIVE AND SOCIAL ACTIVITY.[1]

1. *Credit facilities*

(*a*) In addition to its primary function as the government agency for crop collection, the local office of the association has also acted as a bank, accepting deposits and offering credit. Individual deposits are accepted for any sum over 10 sen and draw, at present, 2.2 per cent interest per annum.

(*b*) Credit is available at an interest rate of approximately six per cent per annum based on: (1) faith in the respective individual, (2) availability of a sponsor; or, as is more usual, (3) a pledge of land or a house as collateral. On a short-term loan of less than a year payment of which is met readily at the prescribed time, an interest rate of 3 4 per cent may be substituted at the discretion of the chairman of the respective agricultural co-operative association If payment of any loan is not met, the association has the right to foreclose on the collateral, re-selling the property at public auction in the village.

2. *Processing of Crops*

(*a*) Crops are processed through the Central Foodstuffs Corporation, a government trust which acts as the agent of the agricultural co-operative association on the prefectural level. These co-operative corporations are engaged in milling, canning, production of dairy products, and even rural manufacturing.

(*b*) This monopoly of processing activities above the food collection level, by and for the government, has limited the availability and type of co-operative aid available to farmers. The extent of such aid has varied with the community, depending on the ability of the local agricultural co-operative association to acquire necessary equipment, rather than on the personal initiative of the individual farmers

[1] Source—Material furnished by the Japanese Ministry of Agriculture and Forestry

who usually lack sufficient capital for such material. When a village association has farm machinery at its disposal, it is generally loaned *gratis* or upon payment of a nominal fee to individual farmers or to groups of farmers. At times, the prefectural association may supplement the equipment of village associations. This has been especially true at harvest times.

(*c*) In summary, it can be said that a rural co-operative movement as it is known in western countries, with the implication of individual initiative on the part of the members, is today non-existent in Japan.

3 *Social Services*

(*a*) At harvest time, the village associations operate a day nursery for the infants of people working in the fields. After the harvest, a produce fair is held to honour those farmers who are deemed most energetic in producing food. Awards for thus aiding the food programme are distributed both at this time and throughout the year at various festive occasions

(*b*) Rural education, especially in the form of lectures, has been given special attention. Libraries opened at the various associations boasted a pre-war circulation of 1,400,000 volumes annually.

(*c*) Amusements are provided in the form of festivals and movies. Movies, which are extremely popular among the farmers, are free of charge whenever available at the local association.

The above information is published in detail in the hope that workers of our co-operative societies in India will take advantage of the constitution and rules of co-operative societies in Japan and put the organisation in India on a sound democratic system.

IN CO-OPERATION LIES OUR SALVATION.

CHAPTER XVI

REVOLUTION ON THE LAND

LAND REFORM IN JAPAN

FEUDALISTIC BONDAGE GOES

POOR BENEFITED BY REVOLUTION

LANDLORDS TAKE TO INDUSTRY

FARMERS BUY THEIR LAND

FIRST FREE FARMER

FACTS ABOUT LAND REFORM

TRANSITION IN THE VILLAGES

DEMOCRACY ON THE FARM

CRITICS' VIEWS.

CHAPTER XVI

REVOLUTION ON THE LAND

Most big landowners have lost their pre-eminent positions and have turned to commerce and industry.

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Tenant farmers have been released from semi-feudalistic bondage by land reform measures such as lowering of farm rents payable in money, lowered taxes and the transfer of land ownership to cultivators.

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Medium-scale and poor farmers—especially the poor farmers,—are the ones most benefited by the farm village revolution—SENKO SHINJO.

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Reformation of land ownership will not resolve our difficulties Japan needs other enterprises such as industry, foreign trade and emigration to absorb her population—A critic's view.

I am a born optimist and I believe everything is for good (but we haven't got vision broad enough to see it). The last war and the accompanying troubles will lead Japan and other countries to a better situation. Japan is already in the throes of a mighty though silent revolution This is specially true of the land reform programme introduced by General MacArthur.

To see the changes of centuries kaleidoscoped into a few years is an amazing experience . . . the cycle unchanged but shortened and—almost overnight—the age-old struggle for freedom partially achieved. Such a change from a feudalistic to a modern era is going on in Japan to-day nowhere more markedly than in the various phases of land reform, and in the voluntary agricultural co-operatives.

Three years ago Mr. S. Otsuka, Seya Village, Honshu, Japan, farmed the land his family had farmed for ten generations . . land which belonged to a landlord . . land which he could only have

dreamed might be his own some day. In 1947 he became the first farmer in all Japan to buy land under the new Land Reform Laws. Today Mr. Otsuka (and thousands upon thousands of former tenant farmers like him in Japan) is well on the road towards owning the small segment of land his family had farmed for so long.

All over Japan thousands and thousands of tenant farmers toiled for an entire year to eke out from the soil and from their labours only enough of sustenance, only enough of shelter and of clothes to let them labour for another year.

During 1947 Mr Otsuka, in accordance with SCAP's Land Reform Laws carried out under the supervision of the Eighth Army Military Government teams and the Japanese themselves, made arrangements to buy the land his family had tilled for ten generations. So too did thousands of Japanese tenant farmers. It was the beginning of a new era—democracy made workable for men who had lived in a feudal age As a result of the law thousands of little men, all over Japan, have discovered the dignity of owning land in the country to which they belong. They now have an opportunity to live instead of existing.

LAND REFORM FACTS

In Japan there are about 6,000,000 chobu[1] of farmland altogether of which 2,600,000 have been cultivated by tenants Under the Land Reform programme about 2,000,000 *chobu* will be purchased by the Government and sold to tenants in order that they may carry on independent farming The aim is to make it possible for all farmers to own the land they now cultivate, but, for the sake of convenience, exchange, partition, and combination of lands will be carried on also. The reform plan is based on the exact state of land ownership and cultivation on 23rd November 1945. However, the activities of absentees since that time and the lack of exact records have led to many difficulties and have hindered the operation of the reform.

REVOLUTION IN THE VILLAGES

[2]A MINSHU HYORON article by Senko Shinjo lists factors which have improved the farmers' circumstances and changed the structure of rural villages " Tenant farmers have been released from semi-feudalistic bondage by the lowering of farm rents, payable in money instead of goods " Lowered taxes and the transfer of land ownership to cultivators, together with improved rent conditions, have produced many changes in rural villages.

Most big landowners have lost their pre-eminent positions and turned to commerce and industry, Shinjo asserts " Actual economic power in farm villages now is in the hands of the farming landowners

[1] One Chobu equals 2 45 acres

[2] *Source* —Publication Analysis, May 4th, 1948

with three to five chobu of land (one chobu is equal to 2.45 U.S. acres)." Some tenant farmers and small landed farmers have risen into the middle class economic level. The number of small-scale tenant and owner-cultivator farmers (with two to five tan—10 tan comprise a chobu) has increased greatly, Shinjo reports, and " the agricultural and farm-village proletariat has been enlarged." At the same time, abolition of the Nogyokai (agricultural associations) has ended the strong bureaucratic and central control over the farmers. " Medium-scale and poor farmers—especially the poor farmers—are the ones most benefited by the farm village revolution "

Shinjo notes political as well as economic changes deriving both from structural reform carried out by the Government and the struggle of the people themselves against old controlling elements " The influence of large landowners and bureaucrats has diminished since the end of the war The medium and small-scale landowners have gained political control in most villages This has been proved by the latest local elections "

Hidemi Sakurai, an official of the Farmland Section of the Ministry of Agricultural and Forestry, also describes changes in farm village structure in a SHIN NOGEI article The programme of agrarian reform, he explains, aims at the democratisation of rural villages and seeks, socially to break the tie between the landlord and his tenants, economically, to create independent owner-cultivators, and, spiritually, to free the farmers of their servile attitude towards the landlord. Sakurai considers the institution of low money rents (rather than payment in farm products) the primary instrument of reform, asserting that the money surplus created by reduction of rents will be applied to the development of agricultural industry and arts This will destroy the old belief that any improvement of conditions or techniques must depend on the benevolence of landlords

Democracy on the Farm

According to Mr. Robert S Hardie

" This land reform programme is not an unproductive, idealistic, share the wealth scheme," It's a programme to give democracy a chance on the farms and to step up agricultural efficiency.

" The programme emphasises private, rather than state, and individual rather than collective, ownership of the land ".

Land reform is carried out primarily under two Diet Laws, and both, according to L I Hewes of Natural Resources Section, SCAP, were written so as to insure that the new era for Japan's 35,000,000 farmers will see increased food production

The first law directs the forced sale to the Government of all agricultural lands owned by absentee landlords, nearly all other

cultivated land holdings in excess of 3 cho (7½ acres) in Kyushu, Honshu, and Shikoku and 12 cho in Hokkaido, corporation-owned lands not directly related to the principal objective of the corporation and lands capable of reclamation for agricultural use.

The land is then to be resold at reasonable prices to former tenants and other small farmers.

With an original goal of 2,000,000 cho, or nearly one-third of Japan's cultivated land, the Government has already acquired 1,516,417 cho and sold to new land owners 427,320 cho, with popular demand officially described as running far ahead of the amount of land the Government is putting up for sale

The second law, the Agricultural Land Adjustment Law, permanently regulates land use

SCAP supervisors of the programme say the two laws offer the following possibilities of increased crop production ·

First, land reform creates thousands of new farm owner-operators who generally are better producers than tenants.

Second, it virtually eliminates the powerful absentee landlord, who usually showed little interest in improving his property or insuring efficient operation, according to SCAP officials Lands purchased by the Government are being sub-divided into family-sized farms whose intensive cultivation will be vital to the small owner-farmers.

Third, the land-purchase programme requires the Agricultural Land Commissions (elected bodies made up of local community farmers) to accept only those applicants for purchase of " land reform " farms who are known to be reliable farmers

Fourth, a farmer who deliberately misuses his land can be forced by the local land commission to sell out, after receiving due notice and a chance to appeal against the decision

Fifth, under the owner-farmer land redistribution programme as many small and scattered plots as possible are being consolidated and sold in solid units This is expected to increase farm efficiency, since the farmer would not have to waste a lot of time (as many now do) running all over the community to work the various half-acre plots of his farm

Critics' Views

The Land Reform plan is facing many problems and difficulties. It has admirers as well as critics and in fairness I must also present the critics' point of view. I reproduce three opinions from the publication analysis published by the SCAP.

1. *Small-Scale Farmers.*

The fear that Japan will have many independent farmers, working on too small a scale, is expressed in an EKONOMISUTO article by T. Sakurai There is a marked contrast, he notes, between the agriculture of the war-devastated countries and those of the new world In the United States for instance, Sakurai claims, the increase in agricultural produce during four war years was double the increase achieved in the previous twenty years. This progress he attributes to mechanisation and development of scientific techniques; he reasons that, therefore, there will be no retrogression. How different, he says, is this situation from that in Japan, where last year's bumper crop simply reflects good weather conditions and not an advance in farming skill. During and immediately after the war, states the writer, the number of farm families in Japan increased from 5,500,000 to 5,700,000. At the same time, the area of agricultural land decreased from 6,000,000 chobu to 5,500,000 chobu and more than 40 per cent of Japan's farmers are now engaged in the cultivation of five tan (1.22 acres) of land or loss. All the labour of these 5,700,000 families, whose total number is said to be 34,500,000 persons, is able to produce only 80 per cent of Japan's food requirement. Furthermore, the wartime emphasis on production of staples still continues and prevents the planned cultivation of crops more suitable to particular circumstances and areas. In the past, "every time we were visited by an agricultural crisis, we experienced rural impoverishment. Neither mechanisation nor specialisation could ever develop against the semi-feudalistic power of the landowners who ruled all the agricultural communities."

Defeat and Occupation have changed the old conditions, and the land reform laws will establish a multitude of owner-farmers throughout Japan. It is debatable, declares Sakurai, whether these farmers will be able to remain independent, with only small tracts of land and primitive farming techniques as their weapons. Ownership of one's land is not the whole battle; maintaining the small farm system is compared with trying to keep a tadpole a tadpole and preventing its logical development into a frog Sakurai urges that the Government encourage the establishment of large-scale agricultural units, organised by co-operative unions of the liberated small farmers, and that some of the 18,000,000,000 yen appropriated for land reform be used by the Government to furnish capital for such enterprises

2 Another writer who finds that feudalistic sentiments are rooted deep in farmer's life is Yen Asami, in JIKYOKU JOHO. "Reform of the farm was proposed so suddenly that farmers are, to say the least, in blank dismay. ... It is doubtful whether farmers are sincerely thankful for this reform. The tenants who should benefit from this reform are benefiting from a great boom compared

to landowners or small holders who, because of their positions in their villages, have to refrain from blackmarket operations," says the author with more than a little class snobbery. "And the tenants don't have to bother with land taxes or rates."

A further difficulty, in the opinion of this man of little faith in change, is that "in farm villages there is a tacit understanding regarding the social order It is impossible to jump over this order. Even if a tenant makes himself a small holder, it will take two generations for the change to be acknowledged, just as when by chance a disgraceful nickname is attached to a family, it will take three generations to wipe it out, however hard the family tries . .. Paternalism abets feudalism. Because of it, landowners do not think they are exploiting tenants, nor do tenants think they are being exploited."

Another JIKYOKU JOHO author, Yosoji Endo, puts the matter more succinctly He contends that "the reason that farmers are apathetic towards land reform is that in the present situation the reform does not show any prospect of increasing profits or income."

3. A SEKAI article by Seiichi Tohata refers to population pressure, and sees great danger in, "the tendency to make Japan again a country of impoverished peasants" He feels that this is in conflict with the avowed Allied aim of democratising the Japanese farming villages. "Before the war, the impoverishment of peasant society was used as the excuse for an expansionist policy . America wants democratisation from us But the Americans have shown no policy concerning the destitute agrarian population, democratisation of which is the basic condition of the democratisation of Japan as a whole. . . Reformation of landownership will not resolve these difficulties. Japan needs other enterprises such as industry, foreign trade and emigration to absorb her population," concludes the writer.

I have already dealt with some of these points in earlier chapters Emigration is the most important and pressing problem facing Japan It is yet too early to say how well the difficulties facing the plan would be overcome, but I am confident that the wheel of revolution will not turn back It is already leaving indelible impressions of important political and social significance on the rural life of the country.

CHAPTER XVII

BACK TO THE LAND

PUNJABI FARMER IN AMERICA

IDEAL FARMER'S WIFE

THE INDIAN SCENE

A COUNTRY OF CONTRASTS

VILLAGES—SOUL OF INDIA

MODERN VILLAGES OF INDIA

PEOPLE OF INDIAN VILLAGES

OUTSTANDING NEEDS OF INDIAN FARMERS

PRINCIPLES OR GUIDE POSTS

THE IMMEDIATE TASK

CHAPTER XVII

BACK TO THE LAND

Of all the professions best is farming, next comes trade and the worst is service.

An old Indian proverb.

The city-bred graduates of today might laugh at the slogan " Back to the land," since they smell in it a backward movement to poverty-stricken villages. I don't blame them for their hatred of poverty, dust, dirt and disease—a picture of our modern village life. When I think of calling educated youth back to the farm, I have in mind the picture of prosperous, self-supporting, contented and ever progressive farmers of the United States and their modern farms and I dream of converting our villages into prosperous country side as in the United States of America, where every home can enjoy all the comforts of modern civilisation—modern farming methods, medical science, electricity, radio, gas, transport, parks, swimming pools, health resorts, libraries, music, art and all of them contribute towards a happy living.

The picture I dream of is not that of an utopia, but the one I have seen with my eyes and in that picture the subjects are not educated Americans but illiterate Hindus, Sikhs and Moslem compatriots of ours from the Punjab, leading prosperous lives on the farms in California, Arizona and other states in America My ideal is a Punjabi farmer, Pandit Sri Ram, who in 1906 was working as a cook and a farm labourer in Sind on four rupees a month and who is now happier than any millionaire in our country He owns about a dozen orchards and is the proud father of nine American citizens (see picture) There are several other Indians who are millionaires and have thousands of acres of rich lands in America but I have selected one of the middle class His wife (whom a bureaucrat might describe illiterate since she has not been to school) is an ideal Indian woman, who works at least twelve hours by the side of her husband on the farm, takes care of home, children (youngest a year-old boy). She speaks fluent English and has a surprising command over the day-to-day world politics. She could tell me all about the shrewd politics of Stalin, the

various speeches of Churchill, and the minute details of the domestic politics of the United States. I was amazed at her mastery of facts and when I asked her how she had been able to acquire all that knowledge when she could not read newspapers, she replied " Every morning when I churn butter and scrub the rooms, I keep my ears on the radio " Her college-trained boys and daughters, all modern Americans, are not so much interested in politics, but the so-called illiterate parents daily take a dose of political commentary with their breakfast.

I can never forget the weeks I spent on their farm, when every morning the Pandit would insist on my listening to various domestic and foreign news broadcasts and the commentaries, and while he picked pears and peaches in the orchard, he would discuss the day's events with his wife and me. Our village womenfolk have a high reputation for hard work, but I have yet to see a harder working woman than my hostess who did all the jobs on the farm, milched four cows twice a day, churned butter, cooked meals, kept the home clean and washed at least three hundred clothes per week Besides this she had to take care of pigs and chicken. Don't forget that she had a year old baby and eight other boys and girls to take care of. The following poem beautifully describes her life :

FARMER'S WIFE.

No woman leads a busier life
Than she who is a farmer's wife.
She's up at morn to greet the sun ;
' Tis dark before her tasks are done
A dozen useful skills she knows
She cooks for hungry men and sews ;
She sweeps and dusts, and milks the cows
And drives them to the field to browse.
From spring until the trees are bare
Two gardens are her constant care...
And one's for truck, the other flowers.
For her there are no restful hours.
' Tis hers to gather up the eggs,
To hang the dairy pans on pegs,
To know before she goes to bed
The stock is watered, strawed and fed.
On Sunday, trim as silver birch,
She leads the children into church
On Monday, with the breakfast
The family wash is hers to do.
When sickness strikes, or injury,
Both nurse and doctor she will be.
Sometimes a mason's work she'll do,
And carpentry and plumbing too.

When autumn comes some help she'll need
The dusty threshing crew to feed.
Three seasons through, without a stop,
She'll can a part of every crop,
Until her cellar room becomes
A vault of peaches, pears and plums,
And how she does so much, so well,
Only a farmer's wife can tell.

Now you will ask me how an average farmer's wife in the United States can manage to do all these jobs and yet be happy. The reply is simple. It is a miracle of science. The American farmer's wife has modern electric laundry, electric stove, gas stove, wood stove, refrigerator and all the modern appliances that make life comfortable. I do not belong to the school that shuns all machinery as untouchable, nor do I believe in becoming slaves of machines as many of our idle rich, neo-rich and supposedly rich do. How many of these can walk a few miles when no car is available ? How many of us can cook a good meal if the servant falls ill or runs away ? How many of us can carry a suit case when no porter is available on a railway platform ? What we need to learn is to make use of machines to make life comfortable for every farmer and labourer. Machines are the products of human brain and we should not hesitate to use them for human good. This is what America is doing. Americans have mastered science and science brings them prosperity, comfort and culture. Now turn to the picture in India.

THE INDIAN SCENE.

You have seen a picture of an Indian farmer in America through Indian eyes. Now let me present you a few pictures of life in India through American eyes (These were presented to an International Conference on Agriculture by D. Spencer Hatch, an American missionary who had devoted nearly twenty years to the service of South Indian farmers). He said :

May I draw for you some verbal pictures ? Not too long ago I was the guest of a reigning Maharaja when he banqueted the Viceroy of India. The stories of fabulous Indian wealth and splendour became reality : the glittering jewels, the costly silks, the uniforms gay and diverse, the turbaned servants waving fans of peacock feathers, the expensive rare foods, strange odours of incense, fantastic music, outside our hall the shuffle of caparisoned elephants as guards of honour ; it was all there

The next week I drove through the night to take a doctor out into a roadless village where an epidemic of cholera was taking a sad toll. I drove the car over the rough countryside as far as I could. Awaiting us were around 200 people, sick, emaciated ; awaiting us with empty

bottles for the quinine which could relieve their recurrent malarial fevers. Men too weak to stand, boys too old for their young years.

" Sir, have you brought the quinine and the doctor ?"

I hung my head in sorrow and in hurt. " Yes, I have brought the doctor, but only the cholera doctor, for them down there." I looked dowr the little valley to where a widowed mother was burying her only son, dead within the hour from cholera.

" Sir, we have been waiting for two days and nights for the doctor to come here, Sir."

" What have you eaten these two days ?", I asked.

" Nothing, Sir. We have nothing here, or in our homes."

I drove through another night to bring quinine and food. Men, women and children weakened from malaria are easy prey for cholera, fevers and infections.

Another picture. A group of villagers, fired by the example of others, were putting in all their spare time to build a road to their village. I walked over the difficult excavations and watched them lift the heavy stones to build a sizable culvert. I was pleased to see a pot, boiling over its traditional fireplace of three stones, there by the road they were making. And I said, " Your dinner "

The answer came with a smile, " Oh, no Sir, only water, Sir." And again I hung my head and wondered how many of us would be willing to work for a road into our villages, on a dinner of a drink of boiled water. My only comfort was the thought that the spirit of service and self-help which these men were learning would bring them into some measure of abundance one of these days.

Still another picture. By moonlight under softly waving palms, I drove my car over a new road into a little village, to accept the honour the villagers were offering me, to open their newly constructed well. My heart was happy that night as tiny little black-eyed girls with garlands of flowers around their necks, sang a beautiful song of the blessed gift of water, of gratitude to our Centre for guidance, that no longer they must struggle with heavy water pots from the distant river, but could have clean fresh water right in their midst. No loving cup was more reverently drunk than the sips the villagers took as I poured from the palm leaf bucket into their outstretched hands, water of the first drawing.

A COUNTRY OF CONTRASTS.

India ranks today as the eighth among the industrial countries of the world. Her industries centre around her 58 cities. But nearly 90 per cent of her 300 million live in 700,000 villages, untouched by industry. India has the largest irrigation system in the world, watering

31,800,000 acres but thousands upon thousands of villagers must walk a mile or more for water Countless tons of her produce are carried on aching heads from roadless villages. India has 205 million head of cattle, nearly half the world's total, but only four cups of milk a month per person !

India is indeed a country of contrasts.

Due to the tremendous industrial activity, occasioned by war needs, India has paid off her centuries of accumulated public indebtedness and had earned a sterling balance of over 3½ billion dollars. Brave figures ! She has also a rural indebtedness estimated at 3 billion U.S. dollars, mostly to money lenders at incredibly high rates—so high that the peasant accumulates debt with his years and hands it on to his descendants Measure all this against a per capita income estimated at $ 20.00 a year, *i.e.*, two annas per day. India is a land of contrasts.

I had the pleasure of working with Dr. Hatch on the India Committee of the Conference to which I was invited as a student of agriculture and a newspaperman. I read two papers before the Committee. Mr. R S. Modak, Dr. Hatch and myself were entrusted with the task of preparing a report on how to improve the rural conditions in India. The Committee were wise enough to entrust the job to two Indians and an American who had spent his life time serving India.

The President in presenting the report to the open conference said .—

I have been very pleased with our India Committee. About twenty of us have had a very active participation. Particularly are the rest of us appreciative of the contribution of the Indian members of the Committee. India has become home to some of us. She has developed in all of us a deep love ; but no matter how long we serve there, our Indian friends are most able to consider services for the Indian people. In other conferences I have attended, I have with regret seen learned committees trying to plan for another people without calling in a single representative of those people. This is a summary of our findings under the three main heads of our report .—

VILLAGES—SOUL OF INDIA.

India is predominantly rural and, therefore, rural reconstruction is one of her most important problems Although something has been done to uplift rural Indian farmers, the work of rural reconstruction is still only in its infancy. A new and lively movement needs to be started in India for rural reconstruction. India has about 700,000 villages, comparatively few towns and still fewer cities. Over 80 per cent of the population of India live in villages. They are farmers, as well as craftsmen. All villages of India are primarily agricultural.

India's production and export of raw materials is second to no other country in the world. The Indian village is India's soul.

The earliest known inhabitants of India, the later settlers, and still later settlers, lived in small, more or less, clans and groups and thus formed villages. At their best, everyone of these villages was an independent, self-sufficient unit.

MODERN VILLAGES OF INDIA.

The present villages of India are very backward in comparison with contemporary villages in other countries. They have deteriorated and are disorganised. They support the country to a great extent and yet are themselves practically starved. One reason for the fall of Indian villages is the many conquests through the centuries, both domestic and foreign. As a result of very heavy outside demands, their economy has been greatly weakened. All progress, industries and education have to a very large extent drifted to towns and cities. Somehow it has not been possible for the Government to appropriate more than about 17 cents per capita annually for education. Over-population does not seem to be a great reason for the present backwardness of the Indian villager because proportionately India is not more populated than Europe. Many villagers often migrate to the city where they earn wages in industrial plants to supplement their meagre village income.

The Indian farmers do not know the art of farming any less now than their forefathers did, but they should really know as much as contemporary modern farmers in other countries do. The caste system in Indian villages originally was among other things somewhat a system of trade unions. Indian farmers still use more or less primitive methods and implements of farming, and this is because more suitable ones are not available to them. More than 90 per cent of the agricultural graduates in India take to civil service in preference to farming because they can thus earn more money. Initiative and leadership in Indian villages seem to have become rare because of the centralised power system.

Most villages use for fuel what they should use for fertiliser because they have no other adequate fuel such as coal or oil available. It is not always profitable for the farmers to ship their produce to cities for want of convenient roads. Although villages are the centres of food production, yet the cities haul and export grain, and the villages have to run to them for food during famines and even sometimes die in the cities when no food is found.

PEOPLE OF INDIAN VILLAGES.

Continuous frustration over generations has made Indian villagers somewhat hopeless. They would rather follow than think, because

they are tired of fruitless thinking. Because of their hard lot they have developed a complex of suspicion and reservedness in their dealings with other people, but underneath the surface they are frank, trusting, and communicative. Their whole culture is precious to them, especially because that is one of the few things that they have succeeded in keeping intact in spite of poverty and backwardness in this modern struggle for survival and freedom Majority of the villagers are quite impressionable, but seem to be conservative, also because of sad experiences of the past and hopelessness for the future. They are all eager to seek help so that they can help themselves, but resent paternalism. They are willing to borrow money at exorbitant rates of interest, not from choice, but from necessity Modern methods and implements of agriculture do not always inspire them because they feel that such are beyond their reach Indian villagers are eager to have small industries established in their villages so that they may earn more money. A great many villagers do not give their very best to farming because they find it to be a task which enriches others and leaves them just where they are. In spite of illiteracy, Indian villagers show great intelligence in the use of their limited franchise. Poverty and fear of extinction have kept Indian village families close together. The doctrine of live or die together is still sacred to them. Many a prophet in India has come from the village.

OUTSTANDING NEEDS OF INDIAN FARMERS.

1. Increase of land area under cultivation.
    (a) As through irrigation.
2 More adequate means of communication.
    (a) As by improved roads, railroads, radio, etc
3. Reforestation.
    (a) By encouraging each village to plant as many trees as possible, year by year.
    (b) By protecting young trees from grazing cattle.
4 Readjustment of land tenure systems.
    In favour of the farmer (much has been done in some provinces since the report was written).
5. Discouraging absentee landlordism.
    (a) As by facilitating land ownership by the farmer.
6 Improvement of soil under cultivation.
    (a) As through provision of fuel to replace waste materials now used as fuel but needed for fertiliser.

(*b*) Through provision of a commercial fertiliser.

7. Improvement of crops, both in quantity and quality.
   (*a*) As more orchards and sale of young trees from controlled nurseries.
   (*b*) Sale of improved seeds for vegetables, as well as for staple crops

8. Improvement of stock.
   (*a*) Through loan or sale of bulls of selected breed.
   (*b*) Sale of eggs of better breeds of fowls and grading up with purebred cocks.

9. More efficient use of labour and time.
   (*a*) Through preparation of work schedules.

10. Encouragement of small industries which can be conducted profitably in a village community.[1]

11. More profitable marketing.
    (*a*) As through co-operative selling societies
    (*b*) By encouraging traditional weekly markets.

12. Reduction of indebtedness.
    (*a*) Through expansion of co-operative credit societies.
    (*b*) By increasing cash earnings.
    (*c*) By urging government to make the charging of exorbitant interest rates a criminal offence.

13. Health measures.
    (*a*) As prevention of malaria.
    (*b*) Control of epidemics such as cholera.
    (*c*) Instruction in building and care of simple latrines
    (*d*) Fly control.
    (*e*) Encouraging families to reserve for their own use sufficient of the foods grown for health
    (*f*) Teaching mothers simple ways of preserving the health of their families, as through personal hygiene.

14. More effective education.
    (*a*) As through compulsory school attendance through the primary grades.
    (*b*) More schools.

[1] List is appended in 'Rural Industries of Japan'

(*c*) Schools with classes that prepare boys and girls for more satisfying living in a village.
(*d*) Adult education
(*e*) Preparation of literature designed to be of interest to farmers and village craftsmen and homemakers.

15. Building upon the interdependence of members of the village community a strong sense of unity regardless of class.
16. Creating a sense of need for health which an extension service can render.
17. Healthy co-operation between government agencies, private agencies, and village clubs.

III. Principles or Guide Posts

This Committee believes that the following principles should guide rural reconstruction in India.

1. Rural reconstruction ought to be an educational process for the enriching the life of all for all rural people
2. The primary agency for policy and programme in such a movement must be local, volunteers, individuals and groups
   (*a*) The programme for each locality must come from the felt needs of the people and be adopted by and for them
   (*b*) The programme should contain services bearing on all sides of life, that is, a " comprehensive " programme
   (*c*) The programme must gradually develop by attainable steps within the financial ability of the people
   (*d*) The programme should help people to help themselves through participation
3. It is the duty of an extension service to provide (1) information, (2) technical aid, and (3) inspiration to these primary local groups but not to enter into competition with them.
   (*a*) There must be co-operation between government, private agencies, and the people.
   (*b*) Rural agencies ought to have no administrative or regulatory functions over local groups.
   (*c*) Extension activities should make wide use of the demonstration method.
   (*d*) Extension should assist people in organising for community action.
   (*e*) Rural agencies should discover, develop, and use volunteer unpaid leadership.
   (*f*) Liaison must be maintained between extension and research.

4. To staff such an extension service, the following characteristics are needed in its personnel.
   (*a*) Workers should be preferably those with a rural background, and be experts in their fields and well qualified in the techniques of not only passing on their services to others, but also of training villagers to carry on themselves.
   (*b*) Workers should live in the village, work solely for rural uplift of the village, and themselves participate in some of the economic activities of the village.
   (*c*) They must work intimately with people, with a sincere brotherly interest in them, and in the inherent desire of the people to raise their economic and social standards of living.
   (*d*) They should understand and appreciate the culture, values and spiritual goals of the people among whom they work.
   (*e*) They must be free of any sense of personal superiority based on their own culture or education, and must have a real faith in the people among whom they serve.
   (*f*) Provision must be made both for pre-service and for in-service training of the personnel.

THE IMMEDIATE TASK.

There is no lack of schemes and grand plans in our country. The immediate task before us is "HOW INDIA CAN GROW MORE FOOD."

India was the world's most prosperous country when her villages were self-supporting. If we want prosperity to return to our land, let us turn our eyes to the villages and make them contented, happy and prosperous. It is an uphill task which requires the services of at least a hundred thousand to a million spirited young workers who would not shun the idea of living on the land. This they can only do when they get rid of the false idea that the only jobs in life are the executive posts in the capital cities of the Centre and the Provinces. Those who are madly in love with the smoke and the foul air of the congested cities, let them be happy there with the movie civilisation in the cities, but those who want simple contented and peaceful life in the fold of Mother Nature should go back to the land. The secret of living happily in a rural environment lies in living a life of moderation and in a spirit of service to fellow men. If I were to advise a young bride on what dowry she should accept from her parents, I would say: "Two acres of land, a cow and a cottage fitted with all the modern appliances, and at least a short-wave radio set." This is my dream of rural India and if America can realise it why not India?

CHAPTER XVIII

HOW TO GROW MORE FOOD

TRAIN 100,000 WORKERS

QUALIFICATIONS FOR PERSONNEL

WE WASTE NOTHING

MASS PRODUCTION OF FERTILISERS

PRESERVING NIGHT SOIL

PEASANT CLUBS

TEACHERS TO LEARN AGRICULTURE

VILLAGE GRAZING GROUNDS

COMMUNITY DAIRIES

MANUFACTURE AGRICULTURAL IMPLEMENTS

INCREASING SPACE FOR CROPS

WANTED MORE CROPS

FISHING FOR FOOD

VALUE OF NITROGEN

GREEN MANURE

LEGUME ROTATION

ABUNDANT WATER SUPPLY

SOUND AND SUITABLE SEED

MIXED CROPPING

WATER CROPS

IMPLEMENTS

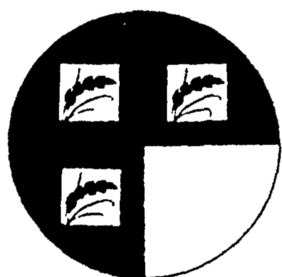
NEW AREA

DRAINAGE

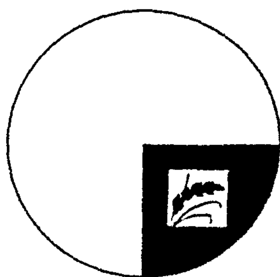
WHY JAPAN GROWS MORE

- Manure preservation system and better distribution of Chemical fertilisers
- Better system of rotation of crops
- Better farming methods
- Modern agricultural implements
- Cooperative system of distribution of agricultural implements
- Research stations in every corner

RICE YIELD PER ACRE



JAPAN



INDIA

MIRACLE OF POWER

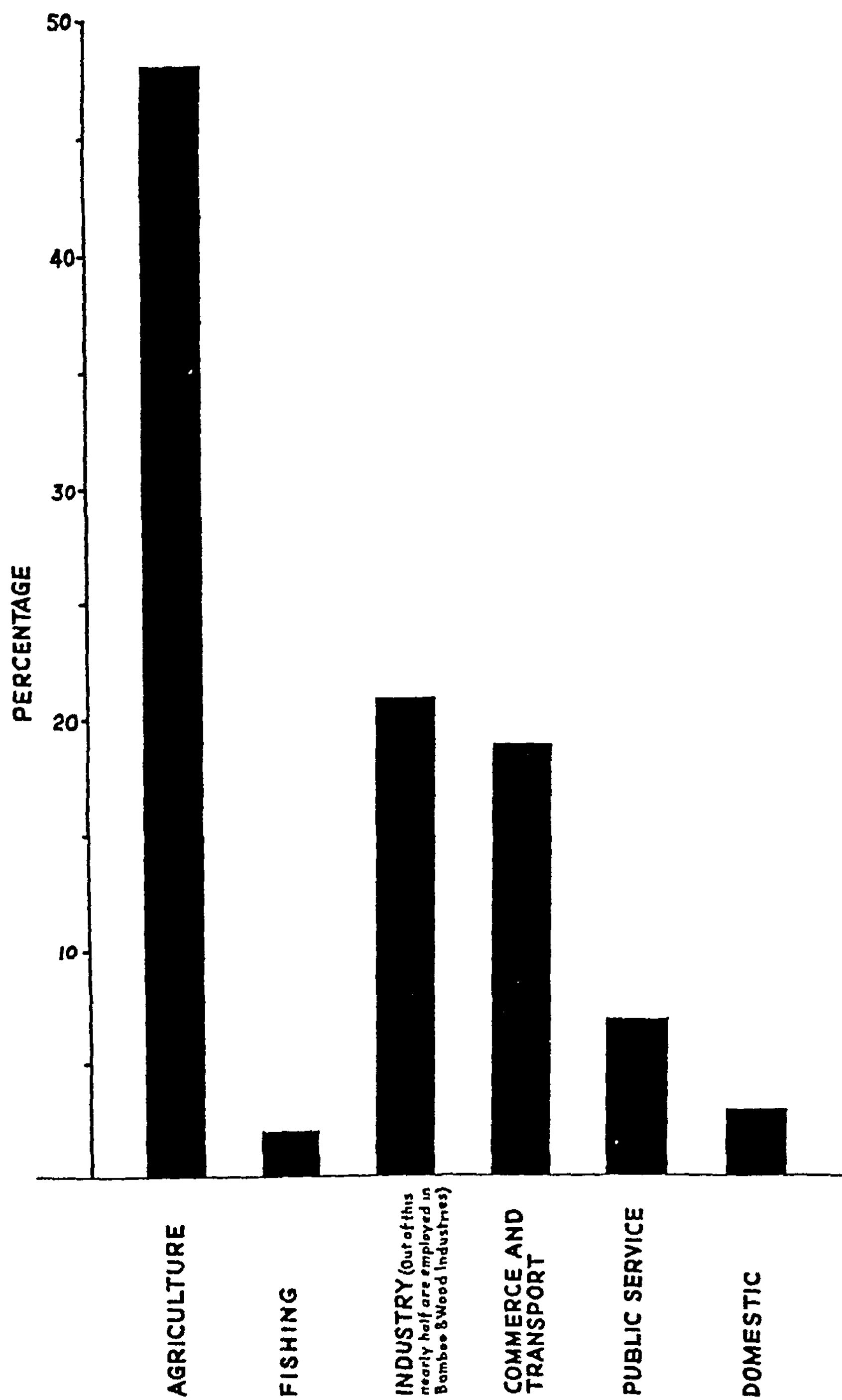
ELECTRIFICATION OF INDUSTRIES IN JAPAN

	TOTAL POWER EQUIPMENT (1000 H.P.)		PERCENTAGE OF ELECTRIC MOTORS TO TOTAL H.P.	
	1909	1933	1909	1933
Textiles	127	931	9·8	80·8
Metals	16	898	37·2	77·9
Machines & Tools	26	494	33·8	90·4
Ceramic Industries	19	364	20·3	72·2
Chemical Industries	44	824	9·2	87·7
Timbering & Working	17	165	5·9	68·2
Printing & Bookbinding	3	36	39·1	98 6
Food & beverages	24	225	9·0	82·3
Other Industries	5	82	4·7	95·9
TOTAL	281	4,019	13·3	82·0

THE FIGURES IN THE ABOVE TABLE ILLUSTRATE HOW RAPIDLY ELECTRIFICATION WAS CARRIED OUT IN THE MANUFACTURING AND MINING INDUSTRIES IN RECENT YEARS. ELECTRIC MOTORS WHICH IN 1909 ACCOUNTED FOR ONLY 13% OF THE TOTAL POWER PRODUCED, APPROXIMATED, 59% AT THE END OF 1919 AND 82 AT THE END OF 1933.

• JAPANESE TRADE AND INDUSTRY (Published by MITSUBISHI Economic Research Bureau, now dissolved by the Scap authorities.)

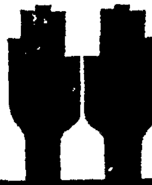
OCCUPATION CENSUS OF JAPAN



WOMEN-SAVIOURS OF JAPAN



TEN MILLION WOMEN WORKERS

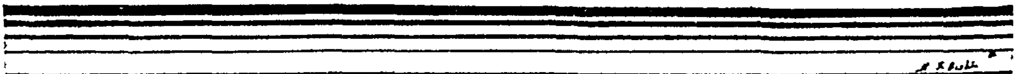


TWENTY MILLION HANDS

BEFORE THE WAR MORE THAN TEN MILLION WOMEN (10,130,000) WORKERS WERE EMPLOYED IN JAPAN.

THE DIVISION OF WORK WAS AS FOLLOWS:

- IN COMMUNICATION (Telephone girls etc)
- MEDICAL PROFESSIONS (Doctors, Nurses etc)
- TEACHING PROFESSIONS
- IN COCOONARY AND FILATURE
- IN HOTELS & RESTAURANTS (Waitresses, Barmaids, & geisha-girls)
- IN BUSINESS
- IN COTTON MILLS
- DOMESTIC SERVANTS
- FARMS



CHAPTER XVIII

HOW TO GROW MORE FOOD

"We throw nothing away, we can't afford to waste night soil. It is worth much money"—A Japanese official in an interview with the author.

* * * *

Thirty crores of people will fertilise 101,113,200 *acres of land with nitrogen at* 15.38 *kg. to an acre while the total area irrigated under cultivation in the whole of India is only* 658,240,000. *What are we doing to conserve this source of supply?*

Twenty-six years ago the late Desh Bandhu C. R. Das appealed to the congressmen assembled at Gaya to go back to the villages and put new life into them by improving their economy, health and general conditions, but the Congress could not translate that appeal into practice Ten years later Gandhiji raised the slogan "Back to the village" and he was partially successful in arousing the conscience of the country. The Congress governments during their short regime adopted some relief measures to help villagers but it was left to the war to remind us of the real significance of the villages, namely that they are our food givers (in fact our back-bone) and if we want to exist we must see that the villages remain functioning, that they can produce more and more food, enough to bear the war burdens Village security is no doubt a great problem in the present emergency but the main problem is of food, more food As a villager and a student of agriculture I beg to offer the following practicable suggestions to enable our villages to grow more food :—

Training of at least one hundred thousand agricultural advisers. India is a land of seven hundred thousand villages. One such agricultural adviser (a peasant with 6 months training in essential agricultural reforms, within reach of poor farmers) should take charge of seven villages. Let us make a beginning with at least ten thousand trained workers from among the village people and the educated unemployed who want to serve the country and serve themselves Let us follow the plan of training workers in China.

QUALIFICATIONS FOR PERSONNEL.

1. *Desirable qualifications of a rural worker should be.*

   (*a*) Rural experience and background.

   (*b*) Physical strength and accepted codes of behaviour, *i.e.*, not in conflict with the local code.

   (*c*) A sympathetic understanding of the local people and their problems.

2. *Training of Personnel:*

   (*a*) Training of the future workers should include principles of economics and rural sociology and techniques of agriculture and home economics adapted to the needs of the area they expect to serve.

   (*b*) Utilise scholarships if necessary to provide suitable training for boys and girls having a rural background.

   (*c*) Workers should be kept informed about new developments in agriculture and extension techniques, and concerning special programmes needing emphasis from time to time.

   (*d*) An efficient and justly-operated system of promotion and rewards for outstanding service and ability is a necessary corollary to selecting and training personnel.

3. *Use of leaders to broaden area of service*

   Increased emphasis should be placed upon use of local peasant leaders in rural programmes and informal training should be given to these leaders.

4. Emphasise the value of the informal instructional methods of extension as a means of educating the youth, not only in agriculture and home making but in other vital interests of the rural community.

5. Any extension programme must be considered and developed with reference to existing national and local cultural patterns.

The aim of all rural reconstruction should be to make village economy self supporting.

Mass Production of Fertilisers

Manufacture of fertilisers on mass scale.

If our agricultural advisers and research scholars are in earnest they must immediately bring out schemes of mass production of fertilisers. The Showa Fertiliser factory near Yokohama produced the cheapest fertilisers in the world, within easy reach of every peasant but until recently they were not allowed to sell their produce in India. The monopolies must go and the State should run such essential industries and supply fertilisers to the farmers at a normal price.

Preserving the Night Soil

Introducing a scientific manure preservation system and carrying on a crusade against burning of animal manure, such as cow dung. We have long been lamenting the waste of human night soil and animal dung so essential for enriching the land. Unless we follow the Japanese system of preservation of night soil we shall not be able to derive valuable manures from this source Japan is the most modern country in Asia yet she faithfully clings to the old practice of preserving the night soil in the homes, in towns and in the fields in the villages When I established a home in Tokyo I wrote to the Municipality to send me a sweeper twice daily to clean the toilet. This request shocked the officer-in-charge who wrote back saying that as a special favour he was prepared to send me a sweeper every tenth day although regular collection of night soil from homes was made only once a month. Every home is provided with a disinfectant which is used twice daily to deodorize and the night soil is preserved in a deep pit until the sweeper comes on his round with a clean wooden container (not the open buckets as used in India). The containers are loaded on carts and sometimes on animals. They used to be carried by sweepers too, but the practice has been abandoned. How I wish the sweepers in India could be provided with the same facilities. I asked an official in Tokyo " Why don't you flush the entire night soil out into the sea "? He retorted: " That would be waste. We throw nothing away It is worth much money " The peasant realises the value of night soil so much so that he invites passengers on the roads to use his field lavatory for his benefit Notice boards on the roadside invite passers-by for profit to the owner of the field. Manure is like gold to the peasant.

Every village to have a peasants club (Chaupal) and a small library containing vernacular books on how to improve their economic lot by following improved agricultural methods.

Village school teachers (one from each school) should compulsorily be made to learn a course in agriculture to be able to advise peasants in improved and paying methods

Every village should, as far as water supply and rainfall permit, have a fuel wood forest of its own and put an end to the practice of burning valuable manure for fuel.

Every village must revive the old system of preserving and maintaining grounds for the village cattle.

A panchayati (community) dairy should be established in every village to provide milk to all children and especially the sick and the poor.

Co-operative dairies for supplying milk to neighbouring towns and cities should be opened in every circle of ten villages.

Modern agricultural hand machinery to be manufactured in villages. I have seen most inexpensive machinery used in Japan for sowing, weeding, cutting and thrashing of crops. Some of the machines are worked by foot and cost hardly seven to ten rupees each. Especially the machines for cutting and thrashing save a lot of time and are enjoyable to work. I worked them personally when I spent a few months in a village in Japan.

To introduce the system of increasing space for crops by raising bamboo or sarkanda structures which help the growth of plants.

To reduce the wastage of land by shortening the width of village roads which usually take a lot of space.

WANTED MORE CROPS

Both Japan and China are reputed for growing much crop per acre than we in India do. I have seen how intelligent and hard working the peasants of Japan and China are and how they make every inch of land pay. Two crops of rice are commonly grown each year in southern China and during the winter and early spring, grain, cabbage, peas, beans and ginger may occupy the fields as a third or even fourth crop, making the total year's product from the land very large. The amount of thought, labour and fertilisers given to securing these is even greater and beyond anything our farmers can dream of.

Fishing is an industry which brings millions of rupees to Japan 'Japan has been exporting fish all over the world' I met Japanese fisherman in Mexico, Hollywood, Honolulu, Singapore, Colombo and Manila. They have made it a very paying industry. In China, fish culture is a great village industry. Fish culture, is practised in both deep and shallow basin, the deep permanent ones renting as high as a hundred rupees per acre The shallow basins which can be drained in the dry season are used for fish only during the rainy period, being later drained and planted to some crop. The permanent basins have often come to be ten or twelve feet deep, increasing with long usage, for they are practically drained by pumping and the foot or two of mud which has accumulated, removed and sold as fertiliser to

planters of rice and other crops. India can develop this industry in all those areas where water supply and rainfall are abundant. India's huge water front provides a large field for fish industry run on co-operative lines.

The sea weed industry of Japan offers not only a great solution for food sufficiency but enables Japan to earn quite a few millions from various by-products. We can also introduce this industry in our villages on the coast.

VALUABLE SUGGESTIONS.

My friend Chaudhri Mukhtar Singh with whom I made a joint study of Japan's village industries and agriculture in 1937 has made the following valuable suggestions which deserve serious consideration by our Ministry of Agriculture. Chaudhri Sahib is a practical farmer, an industrialist and a keen research student. Supporting my suggestion not to let the night soil be wasted but utilised as manure instead, Chaudhri Mukhtar Singh adds :—

The main item by which China has maintained its soil fertility is human excreta and urine. 11 lbs of nitrogen is on an average produced by a person in a year. Calculating at that rate 30 crores of people in the Indian Dominion produce 1½ million tons of nitrogen. Is it not enough to supply a big portion of our deficiency in nitrogen ? According to the author of a well known book " Use of waste material " 30 crores of people will fertilise 101,113,200 acres of land with nitrogen at 15 38 Kg to an acre while the total area irrigated under cultivation in the whole of India is only 658,240,000. What are we doing to consider this source of supply ? In all cantonments, railway stations and factories it is simply burnt and in big municipalities we are burying it so deep in barren areas that it is lost for the plant. In villages barring an attempt made by Mahatma Gandhi to evolve an inexpensive latrine we have done nothing. In all big towns near about the sea or rivers, we take pride in throwing this valuable material either in the sea or rivers and thus pollute water and make it injurious both to man and animal A little composting recently started is simply an eye wash This valuable source must be conserved and its burning or burying deep or throwing it into sea or river be prohibited by law We have neither made effective use of our sullage water In the first place it is taken away through *kacha* drains and a lot of it is lost in seepage and whatever is used it is applied in such a concentrated form that our soil becomes sick. By diluting this with pure water we can spread it over four times the area and can benefit thousands of acres to produce good crops.

It must be admitted that in these days of scarcity we cannot save more from yard manure but certainly we can conserve cattle urine

which is far richer in manurial elements than dung. Practice of utilising this valuable article must be introduced amongst the farmers and urine earth be manufactured by million of tons every year and utilised for manure.

GREEN MANURE.

The other but very important and clean source of supply of organic nitrogen is green manuring. We discovered this valuable practice and yet this practice is not utilised to the extent it is used in other foreign countries. I consider our salvation lies in green manuring. But the practice is not likely to become common unless and until we remove the difficulties under which the farmer suffers. Water and good investing plough are his main difficulties. Further it should be so fitted in his crop rotation that the cultivator may not lose one crop. We have relied too much upon the distribution of seed only. If we make it a point that in all irrigated areas at least one fifth of the cultivated area is green manured every year we shall be able to double our yields from this area. We should not rely upon any one crop for this purpose Many new crops will have to be introduced in accordance with our resources, climate and types of soils.

Legume Rotation· If we change the cropping system in such a way that every field must have a legume crop every year we can enrich our soils considerably. We can, by this method, supplement with available manure and maintain the fertility of our soils for a sufficiently long period.

Horn and Hoof. Meal is another source of nitrogen, and it gives 12 per cent nitrogen and a large quantity of phosphoric acid. If we are still enamoured of artificial nitrogen let us use the indigenous fertiliser produced by nature in millions of tons in the country in the shape of saltpetre. It is true that it contains only 12 per cent nitrogen against 20 per cent in sulphate of ammonia and its price is also high but remember that every pie we spend over the former remains in the country It also supplies another important plant ingredient. As regards its price we have never tried to manufacture it by modern up-to-date methods Business for the most part remained in the hands of poor people who have to pay high rate of interest and cannot afford to mechanise the manufacture. If the Government takes it up its price will come down very soon. Bihar is the main source for this article while large quantities are available in the U.P., Madras and the Punjab and other provinces.

Besides nitrogen phosphorus is another element required for crop production Fortunately, most of our soils are said to contain enough of it and for areas which are deficient in it, bones when properly treated will supply the deficiency.

For potassium there is generally no deficiency and if there be any potassium nitrate will supply the same

Over and above the supply of manure there is another important aspect which requires attention. It is the time of application, method and form of manure. In Java for cane production the experts have evolved methods in which fertiliser is applied at particular period of plant growth by spoon near the root of individual plants and this method has paid for the labour and has saved manure. In India we have not even cared to use economically highly expensive manure as oil cakes. If we had simply supplied oil cakes in powder form we would have increased its utility very much. Its use would have been further economised by drilling it with seed and so on. Experts should work upon this aspect and advise the farmer to make the best use of his limited resources. Levelling, bunding and contouring are some of the operations which maintain soil fertility and help in higher crop production. But these operations have not been adopted on a systematic and big scale without which their effect cannot be apparent.

Water Supply:—This question ought to be considered from the following points of view: (*a*) Dry areas where rainfall is enough. (*b*) Dry areas where rainfall is below 20", which must be implemented by artificial means. (*c*) Canal irrigated area. (*d*) Well irrigated area, and (*e*) Areas where well irrigation is possible but wells are not available (*f*) Where rainfall is high and drainage is necessary. (*g*) Erosion.

(*a*) Dry farming is the oldest method practised in India in all precarious tracts. The most important province is Bihar. Government itself has made experiments in dry farming. All these details have, however, not been brought out in a simple language and the practice has not been worked up for different types or climates, soils and crops. Little attempt has been made to evolve draught resisting varieties nor attempts have been made to evolve varieties with little vegetative growth. We must concentrate on these factors as soon as possible.

(*b*) A systematic survey be made of all these areas and places must be specified where tanks or wells may be constructed Haphazard method of sinking wells or building tanks wherever a cultivator demands is a wasteful practice. There is need for systematic sinking wells, constructing wells with arrangement for osrabandi and whenever necessary to supply labour saving water lifts.

(*c*) Artificial irrigation is always expensive and standard of cultivation in these parts must be very high. Failure of water even once when required may ruin the cultivator. Canal Irrigation in India is not designed for intensive cultivation, and the reports are that cultivators are being forced everywhere to sink wells to supplement the canal supply while the department is busy with spreading the

same over the largest area. This mentality of the Department must be stopped immediately. Antiquated 'Canal and Drainage Act' by which no responsibility is attached to the Department and the cultivator is made to suffer the tyranny of the officers must be suitably amended. (*d*) Well irrigation is much more expensive than canal and this explains the fact that most of the existing wells are not worked at all. There is immediate need to evolve power lifts of small capacity worked by electricity or bullocks to save these areas. If our wells can be worked cheap people will take to intensive farming easily. A few good engineers must be employed on the job of evolving lifts for different depths, good, efficient foreign lifts may also be tried. (*e*) Departmental officers must fix the location for wells, construct them, fit them with lifts and provide them with Osrabandi after laying down the command so that in their working there may arise no dispute or difficulties. Providing subsidies for wells is not remedy for the existing evil. (*f*) Drainage has entirely been neglected and every year large areas are affected and valuable crops are lost. This question cannot be tackled by any one village or a paragana but the question has to be studied on all India basis so that inter-district or inter-provincial difficulties may be easily overcome.

(g) Erosion in the same connection is an important question. Most of the C.P. areas, if left alone for some time more, are likely to disappear very soon. Good land is daily being washed and taken to the sea. U.S.A. has done very good work in this connection. If we adopt all those methods and stop erosion we shall save huge areas which are disappearing every year. More attention should be paid to this problem than attempting new areas to be brought under cultivation. Our low yield in certain parts is mostly due to erosion.

Climate, pests and diseases :—Incidence of climate is not systematically studied and we have not even rainfall records properly maintained every ten miles in the country. Sunshine, temperatures, etc , are other factors about which we have very vague ideas. More definite information has to be collected and maintained, some sort of insurance against bad years should be introduced. We cannot go on complaining against nature but we must know the incidence of climate in all its aspects and provide for it. Most of the pests and diseases are either the results of climate or the results of micro-deficiencies of elements of soil. We cannot do justice by allotting this problem only to an entomologist or a plant pathologist but the question must be attacked on all fronts. Plant protection service will be helpful but it will do very little without above investigation.

News of climate must be interpreted for different crops and localities and people should know before hand what calamity is likely to visit them on this score. Such an effective service must be introduced at an early date.

Sound and suitable seed:—We have given this item the last place because the department has made a fetish of it and they consider it to be the sovereign remedy for all their ills. The entire department is wasting its energy on this item alone. In the first place improved varieties barring cane has not been eagerly taken up by the farmers. Besides its effect has always been temporary inasmuch as a high yielding variety must exact more nutrients from the soil and unless they are supplied mere improved seed is of no avail Without maintaining soil fertility we cannot achieve good results in irrigated areas

Our botanists ought to have attacked the problem on other fronts, some of which have already been noted above. Other countries, specially Russia, have shown us the way and we must adopt all these methods in our country. Trying imported seeds is not likely to succeed It may serve better if we send our experts to Russia to learn the technique of seed production suitable for the different areas we have to deal with We have discussed above the different factors upon which the yield depends Over and above these factors there are many more lines whose adoption will increase our yield. Below I describe some of them.

Dofash area:—If we compare the figures we find that most of the area produces only one crop a year. Out of the total area (nett sown) 285,465,000 acres only 40,784,000 are sown twice in the year, *i e*, less than 15 per cent. If we further analyse this area sown twice we shall be surprised to find that most of this dofash area is in dry land in which early fodder is grown and if there is moisture another rabi crop is sown just to take a chance. If we take into consideration 59,022,000 acres of area left as fallow every year we find that we do not cultivate the entire area available for cultivation even for once. If we can produce two crops even in irrigated area which is no less than 65,824,000 acres we can increase our crop production by more than our requirements without bringing any new area under cultivation (Figures given above are from whole of India including states) We should make it a point to grow two crops in all the irrigated areas and so also in places where rainfall is enough and well distributed. Leaving land for recuperation is no more necessary provided we take an intelligent interest in maintaining soil fertility. In Italy where land remains unworkable for a number of months farmers take more than 6 crops some of them being mixed crops Some farmers in India take more than 4 crops a year By a little more attention we can fix up a rotation for growing two crops a year in most of the areas quite easily. Of course we consider green manuring crop as a crop in the above suggestion.

It is regrettable that the farmer has not taken into consideration vegetable crops as ordinary crops and this has narrowed down his choice in cropping, carrots, sweet potato, turnips, etc., which are both

food, protective food and valuable feed for milch cattle, must be included in his rotation.

Mixed cropping :—In dry areas mixed cropping must be encouraged. Maiz with urad, Bajra with moth, barley and wheat, wheat and gram are some of the combinations which are already sown but they and similar others must become quite universal. When we grow two crops we insure in a way a good yield from our fields inasmuch as in the case of drought, or any other calamity, one crop may grow better than the other.

Mixed crop and catch crops may usefully be employed in irrigated areas also. In all cotton areas we can grow pepper, methi or carrot even before cotton is all picked and then crops do not suffer much by trampling Barsem in rice fields before harvesting is a very good practice but is not generally adopted Many combinations may be suggested but as it will depend upon climate, facilities and convenience, I do not try to make an exhaustive list.

Subsistence Farming :—It is unfortunate that inspite of better transport the mentality of the farmer to grow all his requirements himself has not very much changed. This is perhaps one of the main reasons of our low production and keeping to our old diet intact. Some of our holdings are quite unsuitable for growing number of articles which the cultivators need By insisting upon producing such crops he gets very little himself and also decreases the quantity available for our national larder. If we ask him to co-operate in this respect our yield will go higher and the farmer will get more from his fields To induce him to give up his present practice may not be easy. But if we make those articles available and cheap in the market nearby even at a loss we may change his mentality to some extent. If we once succeed in this we shall be getting full value of our land and resources and once we have changed his cropping scheme his diet will also easily change.

Current fallow :—This is our important line of attack which seems to have been neglected Current fallow is due to three main causes One is that the climate is such that areas meant by the farmer for rabi growing do not get enough moisture for sowing a crop In such areas early ripening crops may be helpful Better implements for moisture conservation may be employed The second category consists of the area which has been eroded or otherwise spoiled and gone out of cultivation. It is unfortunate that a systematic record of such areas and the causes by which it effected are not recorded If we do that we shall be able to visualise our difficulty better and shall be able to prescribe remedies for the same

It cannot be said to be a wise policy to lose areas already cultivated and to remain in search of new areas to be brought under the plough

Thirdly there are areas which the proprietor cannot cultivate and will not allow any cultivator to plough the land lest the latter may acquire permanent rights in his land. Such an attitude is criminal against the nation and must be stopped by confiscation of such land to the state.

From the available figures this area has varied from 34 millions to 62 million acres a year during the last ten years If he can cultivate even half of this area we can produce more than what we require.

Food per acre :—Though we are insisting on more production yet we have not concentrated upon producing maximum food from an acre If we make a systematic study we shall be able to change our deficit into surplus within a short period Bhur or sandy areas are generally poor in their fertility There are mostly unirrigated tracts uneven and least cared for. But they are admirably suited to produce root crops like sweet-potato, carrots, tapioca, turumps, ground-nut, etc. The production of dry weight crop will certainly be much more than any of the cereals grown in them. If the Government asks the people to grow these crops and give them guaranteed prices to begin with, with transport facilities we shall be able to improve the economic condition of these areas and will provide better food to the people. These crops may be dried in the sun and ground with flour so that bread may become more nutritive and palatable It is regretted that we have not made a complete study of our edible root-crops which grow wild and are eaten by the poor people. A complete study of these edible roots may give us new crop for cultivation. In U S. America maize has been considerably replaced by sweet potato for making starch and within last few years the latter has become quite an important crop in certain localities. Sugar-cane perhaps give the highest food value per acre but still this crop is neglected by the Central Government in giving stepmotherly treatment to those who manufacture Gur and do not supply cane to the factories. Cane juice and gur are the cheapest sweetening agents for poor man's food

Banana is another crop which gives the highest value for food. Its cultivation should be increased whenever it is possible. Perhaps it may be worthwhile to increase the area under this crop in places most suitable for banana growing. Leafy vegetable is another crop which give highest food value in crop production.

Though methi, bathwa and some other leaves are mixed with bread and eaten yet their general use has not grown Practice of taking raw leaf with food is quite common in other countries and its usefulness if once established, decrease pressure on cereals to some extent.

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useful for growing water nuts, Kasero. Let all these places be utilised for regular production of these crops. Water nuts are good delicious food and this source need not be neglected.

Implements :—Agricultural implements are required both for efficiency and for cheapening the cost. Though efficient implements were in great demand but they were not within the means of cultivator and no attempt was made to popularise them by giving them on hire. Recently due to high wages and prohibitive prices of bullocks labour saving implements have become essential. Before the war cultivator produced crop by good and clean cultivation but in these days the wages are not only high but the work done by labour is very little. Crops are therefore generally neglected by those who depend mostly on hired labour. This one factor explains to a great extent the cause of our low yield per acre during these years. A drive, therefore, both for efficient and labour saving implements is absolutely necessary if we care to avoid the food crisis. All governments should pool all their resources to establish a central factory for this purpose. There all the needs of the farmers should be studied by the experts and implements evolved suitable for different localities. Spasmodic and irregular efforts will not solve the problem Foreign implements may be imported as samples and their designs may be varied according to our need. If we provide good cheap water lift for different depth, a good investing plough, an effective moisture conserving cultivator and a good water culture implement most of our requirements will be covered.

In Japan they use single bullock plough. If these can be introduced in India we can make a good saving. In places like Egypt bullocks are used for cultivation Their implements may be made use of in the country I regret to say that even good implements used in different parts of the country are not being studied as to how far these could be used in other parts either as they are or with some modification This work should no more be neglected I consider a central department and workshop is necessary for this purpose Provinces may multiply these implements in their jurisdiction after the design is finalised. Provinces have neither the means nor the talents for this purpose.

New Area :—I have placed this item last inasmuch as I think we cannot afford to bring more area under cultivation We stand in need of pasture land and forest for timber and fuel. Barren areas or culturable waste should be reserved for this purpose When we find that our yield per acre is capable of being increased to the extent of more than 300 per cent there is no reason as to why we should not concentrate upon producing more. Only areas which are quite good for cultivation and which can be improved without difficulty may only be attempted to be brought under the plough At present our area under cultivation is more than enough for our needs.

In States, of course, there are big areas which are producing very little. There is no harm if they are developed for cultivation.

We have a great deficit in milk without which we cannot produce a healthy nation. It should be given first priority over everything. Even worst alkaline and hard pan areas can be made to grow some tree or another and then under them grasses can easily be grown. In most of the provinces there is a dearth for grazing ground though huge areas are lying waste. There should be no difficulty in raising some types of trees and grasses in this area. If it is done more milk could be produced and less cereals would be needed.

Cultivation of grasses, their varieties and suitability for different areas has altogether been neglected. This is a line which requires immediate attention. In U.S. America a few grasses have been discovered to overcome erosion and supplying good nutritive feed. Our country may have many such grasses whose research will pay its way. It will be a paying proposition for the Government to acquire all the waste areas and after developing them into pastures and forests to sell them back. Suitable conditions may be prescribed so that these areas may always remain forest and pasture areas. Grasses from other countries may be tried with advantage and the literature on reclamation may be collected for adoption.

Drainage :—This is one of the most neglected items. A large area of good crop if always flooded is lost to us. Natural drainage has not improved but has been intercepted by roads, canals and railways It is high timé when this question is systematically approached. This work cannot be done by the cultivators. Provinces should do this work and where large rivers are involved more than two Governments may have to work conjointly. Government of India should assume power or arbitrate in all such cases. Our rivers which flow and destroy every year huge areas and which keep good land around their banks in an unhealthy condition can be made to serve the cheapest system of transport and at the same time lacs of acres will be redeemed for good cultivation or afforestation. There is an immediate need for this item to be taken up.

The Irrigation Department specially on well established canals has engineers who can be spared and if they are placed on this work we can easily train our rivers in useful channels. There may be possibility of lifting their water and utilising it for irrigation.

WHAT IS REALLY NEEDED IS NOT SCHEMES BUT ACTION. WE HAVE TALKED ENOUGH. NOW WE MUST ACT.

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